

**TABLE 1-1**  
**SUMMARY OF INVESTIGATIONS AND INTERIM ACTIONS**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Facility	Year at Facility	Investigation Title	Year Published	Contractor	Summary of Investigation Activities
KPT	August 10, 1983	Preliminary Assessment	July 17, 1985	DEQ (formerly MDHES)	A preliminary site assessment was written for the KPT facility based on an on-site visit to the property by Montanan Department of Environmental Quality (MDEQ) personnel on August 10, 1983. The assessment noted the potential for PCP contamination at the facility.
Reliance	1985	<i>Field Investigation Report, Reliance Refinery, Kalispell, Montana</i>	October 30, 1985	DEQ	DEQ conducted an initial field investigation; eight test pits were dug along the eastern edge of the property and two samples were obtained and analyzed for total metals.
Yale Oil	July & September 1985	<i>Subsurface Investigation and Remedial Action Plan, Exxon Bulk Plant, Kalispell, Montana</i>	October 14, 1985	Applied Earth Sciences, Inc. (AES)	Twelve monitoring wells installed (two wells already existed on property, W-5 and W-6): MW-1 through MW-4 and MW-7 through MW-14. A total of 29 samples collected during the investigation: 10 samples (5 groundwater, 4 soil, and 1 sludge) were sent to Rocky Mountain Analytical Laboratories, and 19 samples (1 background soil, 2 source material, 1 free product, 5 groundwater, and 10 subsurface soil) were sent to EA Engineering for analysis.
Yale Oil	February 1986	<i>Oil Spill Investigation and Remedial Action Plan, Exxon Bulk Plant, Kalispell, Montana</i>	May 14, 1986	AES	Three product samples retrieved: two from inside the tank bottom and one from next to the tank bottom, where product was visible. Three monitoring wells (MW-15, MW-16, and MW-17) were installed but not developed. Soil samples were collected from the boreholes every 5 feet unless soil type changed. Twelve soil samples were collected, but only six were analyzed (two from each borehole).
Yale Oil	February & March 1986	<i>Report of Sampling Activities, Yale Refinery, Kalispell, Montana</i>	May 6, 1986	U.S. Environmental Protection Agency (EPA) Field Investigation Team (FIT)	Groundwater samples were collected from five monitoring wells previously installed by AES in 1985. Two soil samples were collected from the Yale Oil site, and a third was collected from the Montana Power Company tract (6B). One sludge sample was obtained from the southern edge of the abandoned tank bottom.
		<i>Draft Analytical Results Report, Yale Refinery, Kalispell, Montana</i>	July 31, 1986	EPA FIT	Document discusses the results of laboratory analysis on samples acquired during the field investigation conducted at the Yale Oil facility in February and March 1986.
Yale Oil	June 30, 1986	<i>Sampling Activities Report, Yale Refinery, Kalispell, Montana</i>	August 5, 1986	EPA FIT	Additional samples were collected at the Yale Oil site to test for dioxin contamination. All samples collected by EPA FIT were split with AES. Three shallow soil samples were collected, as well as one sludge sample from within the abandoned tank bottom.
Yale Oil	June 30, 1986	<i>Addendum to Oil Spill Investigation and Remedial Action Plan, Exxon Bulk Plant, Kalispell, Montana</i>	September 17, 1986	AES	This document discusses the sampling event that took place on June 30, 1986 (above), by the EPA FIT. One background soil sample (RR-SO-8) is mentioned as being collected 3,000 feet due west of the Exxon site. This sample served as the background sample for both the Yale and Reliance Refinery sites. In addition, this document addresses the comments by DEQ to the remedial action plan submitted on May 14, 1986.
Reliance	February & March 1986	<i>Sampling Activities Report for Reliance Refinery, Kalispell, Montana</i>	April 15, 1986	EPA FIT	Investigation of site; three monitoring wells installed (RR-MW-1 through RR-MW-3), seven groundwater samples collected including one residential well and a municipal supply well, four soil samples (including one background soil sample), and two sludge samples. An electromagnetic survey was also conducted to identify buried metal.

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	February & March 1986	<i>Draft Analytical Results for Reliance Refinery, Kalispell, Montana</i>	July 22, 1986	EPA FIT	Document outlines results of laboratory analysis on samples acquired during the field investigation of the Reliance site in February and June 1986.
Reliance	June 30, 1986	<i>Sampling Activities Report, Reliance Refinery, Kalispell, Montana</i>	August 4, 1986	EPA FIT	Investigation involved collection of four surface soil samples and five sludge samples to evaluate dioxin contamination at the Reliance site. Samples were collected concurrently with the Yale Oil site on June 30, 1986.
		<i>Draft Analytical Results, Reliance Refinery, Kalispell, Montana</i>	October 21, 1986	EPA FIT	Document outlines results of laboratory analysis on samples acquired during the field investigation of the Reliance site in June 1986.
Reliance / KPT	October & November 1988	<i>Final Report for Kalispell Post and Pole/Reliance Refinery, Kalispell, Montana</i>	June 30, 1989	MSE, Inc (MSE)	Three monitoring wells were installed on the Kalispell Pole and Timber Co. (KPT) property. Five groundwater samples were collected from KPT, two were collected from Reliance wells RR-MW-1 and RR-MW-2, and one groundwater sample was collected from Yale Oil monitoring well MW-12. Six soil samples were obtained (three from KPT and three from Reliance), and one sludge sample was collected from a buried drum on the Reliance site.
KPT / Yale Oil / Reliance	1989	<i>Final Phase II Site Investigation Sampling and Analytical Results Report for the Kalispell Pole and Timber Site</i>	June 1990	MSE	Two monitoring wells were installed on the KPT Co. property, one shallow (GW-5, 26 feet) and one deep (GW-4, 135 feet). Nine groundwater samples were collected, two from the new monitoring wells on the KPT site, four from Yale Refinery monitoring wells (GW-4, GW-12, GW-13, GW-14), and three QA samples. Water level and survey measurements were performed on all existing wells at the KPT, Reliance, and Yale Oil properties.
KPT	June 1991	<i>Sampling and Analytical Results Report for the Kalispell Pole and Timber Site</i>	October 1991	MSE	Three monitoring wells at KPT were sampled (GW-3, GW-4, and GW-5) and nine residential wells to the northeast, east, and southeast of KPT were sampled. The Evergreen Water District Well #1 (northeast) was also sampled.
KPT / Reliance	August 1991	<i>Preliminary Extent of Soil Contamination &amp; Hydrogeological Investigation - Kalispell Pole &amp; Timber Site</i>	February 1992	EPA contracts Roy F. Weston Inc.	Field activities were conducted in three phases: Phase I - 12 soil samples were collected from KPT and five soil samples were collected from the Reliance site. Phase II - 12 monitoring wells (five on KPT, three on Reliance, four on Yale Oil) were sampled. Phase III - 15 trenches and nine test pits within the KPT site and 133 surface and subsurface soil samples were collected.
Wal-Mart	1991	<i>Phase I Environmental Site Assessment for Wal-Mart Development, Evergreen, Montana</i>	October 1991	NTL Engineering and Geoscience, Inc. (NTL)	The investigation involved historical document review and interviews with current owners, adjacent business owners, and local and state officials to evaluate potential environmental impacts to the property. Based on proximity to KPT, Reliance, and Yale Oil facilities, a Phase II ESA is recommended.
Wal-Mart	1991	<i>Geotechnical Investigation, Wal-Mart Retail Development, Evergreen, Montana</i>	October 25, 1991	NTL	Twenty-eight borings were installed and two test pits. The work was performed to determine soil characteristics for building construction and engineering. Approximately 128 soil samples were retrieved during excavation of the borings; used to analyze for soil moisture, compression, and related factors.

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Wal-Mart	1992	<i>Phase II Environmental Site Assessment, Wal-Mart Retail Development, Evergreen, Montana</i>	February 1992	NTL	Four borings installed (EH-1 through EH-4) and soil samples collected from each boring. Monitoring wells were installed in the three of the borings (EH-1, EH-2, and EH-3). All three wells were sampled in addition to a residential well, RW-1. Impacts of refinery operations noted and a Phase III ESA is recommended.
Wal-Mart	1992	<i>Phase III Environmental Site Assessment Seaman Mobile Homes, Kalispell, Montana</i>	August 24, 1992	Spratt & Associates Consulting Hydrogeology	Twenty-three borings installed on the property; eight were completed as monitoring wells (SW-5 through SW-12). Wells EH-1, MW-14, SW-5, SW-6, and SW-7 were sampled for analysis of groundwater.
Wal-Mart	March 1993	<i>Initial Site Assessment Preliminary Report</i>	March 29, 1993	Spratt & Associates Consulting Hydrogeology	Four monitoring wells were installed (PW-1, PW-2C, PW-2D, and PW-3) on the premises. Four soil samples were collected from the boreholes before the wells were finished. When the wells were completed, four groundwater samples were obtained from each new well. Envirocon, Inc., provided oversight.
Wal-Mart	1993	<i>Larsen Property Groundwater Investigation</i>	May 7, 1993	Envirocon, Inc.	Envirocon, Inc., report detailing the monitoring well installation, sampling, and analytical results from Spratt and Associates work in March 1993 (see above).
Yale Oil	November 1992 - September 1993	<i>Abatement Activities Report for Aboveground Tank Bottom and Underground Piping, Exxon Former Bulk Plant, Kalispell, Montana</i>	April 15, 1994	AES	Removal action included demolishing all structures on property, removing old piping, excavating and removing the tank bottom. In addition, contaminated soil was treated by thermal desorption (approximately 10,465 cubic yards) and replaced.
Wal-Mart	1994-1995	<i>Remedial Action Report, Jefferson Center, Kalispell, Montana</i>	March 1, 1995	Tetra Tech, Inc.	Remediation work plan outlining the soil sampling, contaminated soil removal, soil permeability testing, monitoring well and an SVE/air sparging system installation, and monitoring at the Wal-Mart property. (Four new wells installed, NW-1 through NW-4, and several existing wells redrilled.)
Yale Oil	April 1995	<i>Final Quarterly Status Report, Former Exxon Kalispell Bulk Plant, Kalispell, Montana</i>	May 22, 1995	Secor International, Inc.	Quarterly groundwater sampling at the Yale Oil Refinery site. Three quarters of the Yale Oil monitoring wells, GWY-3, GWY-4 and GWY-7 through GWY-13, were sampled in April, August, and October 1995.
	August 1995		September 25, 1995		
	October 1995		November 27, 1995		
Wal-Mart	June 1995	<i>Phase II Environmental Site Assessment</i>	June 1995	Tetra Tech, Inc.	Four borings installed (Borings 1 through 4) on the northwest corner of the Wal-Mart property. Soil samples were collected from each boring. Temporary monitoring wells were installed in each boring, and groundwater samples were obtained from each. A permanent well was constructed at Boring 1, but the other three temporary wells were abandoned.
KPT	November 1994 - April 1995	<i>Site Investigation Report for Kalispell Pole &amp; Timber, Kalispell, Montana</i>	July 1995	Remediation Technologies, Inc. (RETEC)	Eight monitoring wells were installed on the KPT property (KPT-1 through KPT-8; in addition to GW-1 through GW-5 installed during the Weston 1992 investigation). Groundwater samples were collected from the new wells, and soil samples were obtained from depths of 2 to 20 feet bgs at many of the same locations as in the Weston 1992 study.

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Reliance	1996	<i>Draft Feasibility Study Report for the Reliance Refinery Site</i>	December 1997	Pioneer Technical Services, Inc. (PTS)	PTS prepared a feasibility study (FS) for the Reliance facility in 1996 to evaluate potential remediation alternatives for surface and subsurface soils and sludge.
Reliance / Yale Oil / KPT	March & April 1996	<i>Final Phase I Remedial Investigation Report for the Reliance Refinery Site, Kalispell, Montana</i>	December 2000	PTS	Four monitoring wells were installed (GWRR-4 through GWRR-7). Nine groundwater samples were collected (seven from Reliance, one from KPT well GW-5, and one from Reliance well MW-12). In all, 99 test pits were excavated and 115 soil samples were sent to a laboratory for analysis.
North of Reliance / Northeast of KPT	May 1996	None	Data received but no report issued	DEQ	DEQ samples the Rask residential well because of reports of a diesel odor and dark gray material in water softener (as reported by resident). Residence is connected to public water supply.
KPT	August 1996	<i>Supplemental Remedial Investigation Report, Kalispell Pole &amp; Timber, Kalispell, Montana</i>	March 16, 1998	Remediation Technologies, Inc. (RETEC)	Seventeen test pits (TP-100 through TP-104; TP-106 through TP-117) were dug on the KPT property and 15 soil samples were collected. Seven monitoring wells were also installed (KPT-9 through KPT-15). Groundwater samples were collected periodically on all accessible wells on KPT, Reliance, and Yale Oil facilities from September 1996 to August 1997.
KPT	1996	<i>Work Plan for an Air Sparging Interim Measure at the Kalispell Pole and Timber Site, Kalispell, Montana.</i>	May 1996	RETEC	The document discusses the pilot-scale air-sparging system installed along the BNSF property boundary. Eleven air injection wells (ASW-1 through ASW-11) were constructed on the KPT property and were operational in September 1996.
Reliance	May 1998	None	Data received but no report issued	DEQ	DEQ personnel collected 50 shallow soil samples from the Reliance facility.
KPT	June, July, & August 1998	<i>Pentachlorophenol Hot Spot Removal Work Plan</i>	January 15, 1999	The Retec Group, Inc. (formerly ThermoRetec Consulting Corporation)	Sixty-nine soil samples were collected from 42 locations on the KPT property to delineate PCP "hot spots" as part of a 1996 work plan. The results of that sampling event allowed ThermoRetec to prepare the <i>Pentachlorophenol Hot Spot Removal Work Plan</i> . ThermoRetec estimated that approximately 400 cubic yards of soil should be removed.
KPT	April 1999	<i>Excavation Completion Report</i>	July 28, 2000	The Retec Group, Inc.	The document discusses the removal action taken at the KPT facility in April 1999. Approximately 470 cubic yards of surface and subsurface (to 6 feet bgs) soil was removed. Three soil samples were collected from the pit before it was backfilled. One composite sample was collected from the excavated soil before disposal.
Yale Oil	November 2000	None	Data received but no report issued	Maxim Technologies, Inc.	Groundwater samples were collected from GWY-3, GWY-4, GWY-10, GWY-12, GWY-13, and GWY 14 and analyzed for VPH.

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KPT / Reliance / Yale Oil	Various; report discusses previous site investigations	<i>Kalispell Pole &amp; Timber Data Summary Report, Kalispell, Montana: Volume 1 of 2: Report and Appendix A</i>	July 17, 2001	The Retec Group, Inc.	Document discusses previous investigations and sampling efforts at the Reliance, the Yale Oil, and the KPT sites.
Reliance	April 2002	<i>Summary of Soil &amp; Groundwater Characterization of the McElroy &amp; Wilken Property, Reliance Refinery Facility</i>	July 2002	Land & Water Consulting, Inc. (LWC)	Two monitoring wells were installed on the Reliance site (GWRR-8 and GWRR-9). Soil samples were collected from three test pits and two surface locations on the McElroy and Wilken property.
Reliance	June & October 2002	<i>Phase II Remedial Investigation/Feasibility Study - Reliance Refinery Facility</i>	December 2002	LWC	Sixteen soil samples were collected from the northern area and three soil samples (for dioxin/furan analysis) were collected from the southern area of the Reliance site. Groundwater samples were collected from wells GWRR-1, GWRR-3, and GWRR-6 in July and October.
Yale Oil	May 2002	None	Data received but no report issued	Hydrometrics, Inc.	Groundwater samples were collected from GWY-3, GWY-4, GWY-10, GWY-12, GWY-13, and GWY-14 and analyzed for VPH.
KPT / Reliance / Yale Oil	February 1999	<i>Semi-Annual Groundwater Monitoring Report</i>	February 1999	The Retec Group, Inc.	Semi-annual groundwater monitoring events. Groundwater level measurements and groundwater samples collected from shallow and deep monitoring wells on the KPT, Reliance, and Yale Oil facilities.
	July 2001	<i>Semi-Annual Groundwater Monitoring Report</i>	July 2001		
	August 2002	<i>Semi-Annual Groundwater Monitoring Report</i>	August 2002		
	April 2003	<i>Semi-Annual Groundwater Monitoring Report</i>	April 2003		
	October 2003	<i>Semi-Annual Groundwater Monitoring Report</i>	October 2003		
	April 2004	<i>Semi-Annual Groundwater Monitoring Report</i>	April 2004		
	October 2004	<i>Semi-Annual Groundwater Monitoring Report</i>	October 2004		
	April 2005	<i>Semi-Annual Groundwater Monitoring Report</i>	April 2005		
KPT	May & September 2004	<i>As Built Report, Full Scale In Situ Ozonation System, Kalispell Pole and Timber, Kalispell, Montana</i>	January 21, 2005	Environmental Resources Management (ERM) West, Inc.	Report outlines the interim action taken to install an in situ ozonation system on the KPT site. Two new monitoring wells were installed (SBM-1 and SBM-2) as well as several ozone injection wells.
Rocky Mountain Marine	April 2005	<i>Site Investigation Relative to Petroleum Hydrocarbon Impact to Subsurface at Rocky Mountain Marine</i>	April 26, 2005	Corwin Environmental Consultants, Inc.	Four borings were excavated on the Rocky Mountain Marine property south of the Yale Oil facility. Eight composite soil samples were collected. Two monitoring wells (MW-01 and MW-02) were installed and groundwater samples were collected. All samples were analyzed for EPH screen.

**TABLE 2-1**  
**SAMPLING SUMMARY**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Media Type	Number of Samples Collected	Analyses Performed
GW <sup>a</sup>	112	Standard analyte suite <sup>b</sup> , Metals, Dioxins and Furans, Formaldehyde, Chloride, Bromate
SS <sup>c</sup>	155	Standard analyte suite, Metals, Dioxins and Furans, PCP (only), PCB, TCLP, SPLP
SB	113	Standard analyte suite, Metals, Dioxins and Furans, SPLP, TOC, Physical parameters <sup>d</sup>
SW	5	Standard analyte suite, Metals, Dioxins and Furans, Surface water levels
SE	5	Standard analyte suite, Metals, Dioxins and Furans
IDW	7	PCP, EPH, SVOC, Dioxins and Furans
Opportunistic Soil	14	Standard analyte suite, Metals, Dioxins and Furans, SPLP
Opportunistic Water	7	Standard analyte suite, Metals

Notes:

- a      Sample total for groundwater includes samples collected from new, existing, residential, and industrial wells.
- b      Standard analyte suite includes the following analyses for both solid and liquid matrices:  
 PCP:     By EPA Method 8151A  
 EPH/VPH: By Massachusetts Method, DEQ guidance dated October 2003. VPH was analyzed separately from EPH. An EPH screen was initially performed; water samples greater than 300 µg/L total EPH and soil samples greater than 50 mg/kg total EPH were subjected to EPH fractionation.  
 VOC:     By EPA 8260B  
 SVOC:    By EPA Method 8270C (PAHs by 8270 SIM)
- c      Sample total for surface soil includes residential and background surface soil samples.
- d      Samples submitted for physical parameters were analyzed for soil pH, plasticity, specific gravity, porosity, particle size, and moisture content.

EPH	Extractable Petroleum Hydrocarbons	TCLP	Toxic Characteristic Leaching Procedure
GW	Groundwater	TOC	Total Organic Carbon
IDW	Investigation-Derived Waste	VOC	Volatile Organic Compounds
PAH	Polynuclear Aromatic Hydrocarbons	VPH	Volatile Petroleum Hydrocarbons
PCB	Polychlorinated Biphenyl		
PCP	Pentachlorophenol		
QC	Quality Control		
SB	Subsurface Soil		
SE	Sediment		
SPLP	Synthetic Precipitation Leaching Procedure		
SS	Surface Soil		
SVOC	Semivolatile Organic Compounds		
SW	Surface Water		

**TABLE 2-2**  
**MONITORING WELL CONSTRUCTION DATA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
<b>Previously Installed Monitoring Wells</b>												
GWY-1	MW-1; YR-GW-4	Yale Oil	Abandoned (1992)	---	---	4.0	10.0	30.0	30.0	---	08/1985	---
GWY-2	MW-2	Yale Oil	Abandoned (1992)	---	---	4.0	10.0	30.0	30.0	---	08/1985	---
GWY-3	MW-3; YR-GW-3	Yale Oil	Existing	2934.92	Top of PVC	4.0	10.0	30.0	30.0	---	08/1985	---
GWY-4	MW-4; YR-GW-2	Yale Oil	Existing	2934.06	Top of PVC	4.0	10.0	30.0	30.0	---	08/1985	---
GWY-5	W-5	Yale Oil	Abandoned (1992)	---	---	---	---	---	---	---	---	---
GWY-6	W-6	Yale Oil	Not Found	---	---	---	---	---	---	---	---	---
GWY-7	MW-7	Yale Oil	Not Found	---	---	4.0	10.0	30.0	30.0	---	09/1985	---
GWY-8	MW-8	Yale Oil	Not Found	---	---	4.0	10.0	30.0	30.0	---	09/1985	---
GWY-9	MW-9; YR-GW-5	Yale Oil	Not Found	---	---	4.0	10.0	30.0	30.0	---	09/1985	---
GWY-10	MW-10	Yale Oil	Existing	2933.75	Top of PVC	4.0	10.0	30.0	30.0	---	09/1985	2928.29
GWY-11	MW-11	Yale Oil	Not Found	---	---	4.0	10.0	30.0	30.0	---	09/1985	---
GWY-12	MW-12; YR-GW-1	Yale Oil	Existing	2933.13	Top of PVC	4.0	10.0	30.0	30.0	---	09/1985	2928.29
GWY-13	MW-13	Yale Oil	Existing	2932.56	Top of PVC	4.0	10.0	30.0	30.0	---	09/1985	---
GWY-14	MW-14	Yale Oil	Existing	2934.62	Top of PVC	4.0	10.0	30.0	30.0	---	09/1985	2928.29
GWY-15	MW-15	Yale Oil	Abandoned (1992)	---	---	4.0	5.0	15.0	15.0	---	04/1986	---
GWY-16	MW-16	Yale Oil	Abandoned (1992)	---	---	4.0	9.0	24.5	25.0	---	04/1986	---
GWY-17	MW-17	Yale Oil	Abandoned (1992)	---	---	4.0	6.0	17.5	18.0	---	04/1986	---
CLCW-1	None	Yale Oil	Existing	2935.61	Top of Casing	---	---	---	---	---	---	---
GWRR-1	RR-MW-1	Reliance	Existing	2929.32	Top of PVC	2.0	11.9	21.9	24.0	---	2/25/1986	---
GWRR-2	RR-MW-2	Reliance	Existing	2932.54	Top of PVC	2.0	12.85	22.85	25.0	---	2/27/1986	---
GWRR-3	RR-MW-3	Reliance	Existing	2928.75	Top of PVC	2.0	8.65	18.65	20.0	---	2/26/1986	---
GWRR-4	None	Reliance	Existing	2931.76	Top of PVC	2.0	4.75	14.75	20.0	---	4/8/1996	---
GWRR-5	None	Reliance	Existing	2932.36	Top of PVC	2.0	13.0	23.0	23.3	---	4/9/1996	---
GWRR-6	None	Reliance	Existing	2930.34	Top of PVC	2.0	4.75	14.75	25.0	---	4/9/1996	---
GWRR-7	None	Reliance	Existing	2931.12	Top of PVC	2.0	6.25	16.25	16.5	---	4/10/1996	---
GWRR-8	None	Reliance	Existing	2938.15	Top of PVC	2.0	20.5	30.5	32.0	---	4/23/2002	---
GWRR-9	None	Reliance	Existing	2934.27	Top of PVC	2.0	16.0	26.0	28.0	---	4/23/2002	---

**TABLE 2-2**  
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Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
KPT-17	None	Reliance	Existing	2929.58	Top of PVC	2.00	7.50	12.50	13.00	---	11/1/2005	---
KPT-18	None	Reliance	Existing	2929.71	Top of PVC	2.00	24.00	34.00	54.00	---	11/4/2005	---
PRW-1	Product Recovery Well 1	Reliance	Existing	---	---	12.0	2.0	12.0	12.0	---	8/2002	---
PRW-2	Product Recovery Well 2	Reliance	Existing	---	---	12.0	2.0	12.0	12.0	---	8/2002	---
GW-1	None	KPT	Existing	2933.94	Top of PVC	4.0	11.9	21.9	24.0	---	10/31/1988	---
GW-2	None	KPT	Abandoned (1995)	---	---	4.0	13.0	23.0	24.0	---	10/30/1988	---
GW-3	KPT-MW-3	KPT	Abandoned (1995)	---	---	4.0	11.8	21.8	23.0	---	10/29/1988	---
GW-4	KPT-MW-4	KPT	Abandoned (1995)	---	---	4.0	108.0	118.0	137.0	---	2/17/1989	---
GW-5	KPT-MW-5	KPT	Existing	2934.64	Top of PVC	4.0	14.0	24.0	24.5	---	12/17/1989	---
KPT-1	None	KPT	Existing	2939.84	Top of PVC	4.0	13.0	28.0	29.0	---	10/29/1994	2934.12
KPT-2	None	KPT	Existing	2938.55	Top of Steel	4.0	13.0	28.0	29.0	---	10/27/1994	2932.78
KPT-3	None	KPT	Existing	2937.17	Top of PVC	4.0	13.0	28.0	29.0	---	10/28/1994	2931.66
KPT-4	None	KPT	Existing	2935.44	Top of PVC	4.0	13.0	28.0	29.0	---	10/28/1994	2929.61
KPT-5	None	KPT	Existing	2934.66	Top of PVC	4.0	13.0	28.0	29.0	---	10/28/1994	2928.99
KPT-6	None	KPT	Existing	2936.18	Top of PVC	4.0	13.0	28.0	29.0	---	10/27/1994	2930.15
KPT-7	None	KPT	Existing	2935.31	Top of PVC	4.0	12.5	27.5	28.5	---	10/29/1994	2928.86
KPT-8	None	KPT	Existing	2935.16	Top of PVC	4.0	110.0	120.0	122.0	---	10/28/1994	2929.33
KPT-9	None	KPT	Existing	2925.77	Top of Steel	4.0	6.0	16.0	23.0	---	9/6/1996	2921.47
KPT-10	None	KPT	Existing	2925.35	Top of PVC	4.0	8.0	23.0	27.0	---	11/18/1996	2920.06
KPT-11	None	KPT	Existing	2925.84	Top of PVC	2.0	52.0	72.0	74.0	---	11/15/1996	2921.92
KPT-12	None	KPT	Existing	2939.51	Top of PVC	4.0	14.0	24.0	24.5	---	9/6/1996	2934.03
KPT-13	None	KPT	Existing	2927.55	Top of PVC	2.0	109.0	119.0	120.0	---	11/14/1996	2921.77
KPT-14	None	KPT	Existing	2925.95	Top of PVC	2.0	96.0	106.0	109.0	---	11/20/1996	2920.69
KPT-15	None	KPT	Existing	2934.80	Top of PVC	2.0	101.0	111.0	117.0	---	11/21/1996	2929.28
KPT-16	None	KPT	Existing	2935.66	Top of PVC	2.0	14.0	29.0	29.5	---	4/7/1999	---
KPT-19	None	KPT	Existing	2932.89	Top of PVC	2.00	13.00	23.00	23.50	---	11/3/2005	---
KPT-20	None	KPT	Existing	2932.90	Top of PVC	2.00	10.00	20.00	21.00	---	11/3/2005	---
KPT-21	None	KPT	Existing	2933.50	Top of PVC	2.00	8.00	23.00	23.50	---	11/3/2005	---
KPT-22	None	KPT	Existing	2926.78	Top of PVC	2.00	6.00	16.00	16.00	---	11/5/2005	---

**TABLE 2-2**  
**MONITORING WELL CONSTRUCTION DATA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
OSW-1	None	KPT	Existing	2932.50	Top of Steel	4.0	11.0	26.0	26.0	---	9/3/1996	2930.36
OSW-2	None	KPT	Existing	2932.01	Top of Steel	4.0	11.0	26.0	26.0	---	9/5/1996	2929.95
OMW-1	None	KPT	Existing	2925.55	Top of PVC	2.0	12.0	27.0	27.5	---	4/7/1999	---
OMW-2	None	KPT	Existing	2931.09	Top of PVC	2.0	12.0	27.0	27.5	---	4/7/1999	---
OMW-3	None	KPT	Existing	2923.82	Top of PVC	2.0	12.0	27.0	27.5	---	4/7/1999	---
OMW-4	None	KPT	Existing	2931.36	Top of PVC	2.0	12.0	27.0	27.5	---	4/7/1999	---
OMW-5	None	KPT	Existing	---	---	---	---	---	---	---	---	---
OMW-6	None	KPT	Existing	---	---	---	---	---	---	---	---	---
SBM-1	None	KPT	Existing	2936.23	Top of Casing	4.0	17.0	28.0	30.6	---	5/11/2004	---
SBM-2	None	KPT	Existing	2936.68	Top of Casing	4.0	17.0	28.0	30.2	---	5/11/2004	---
EH-1	None	Wal-Mart	Existing	2910.17	Top of Casing	2.0	3.0	11.0	12.5	---	1/13/1992	2907.83
EH-2	None	Wal-Mart	Not Found	2921.16	Top of Casing	2.0	8.0	18.0	19.5	---	1/14/1992	2918.49
EH-3	None	Wal-Mart	Existing	2918.74	Top of Casing	2.0	6.0	16.0	17.5	---	1/14/1992	2915.80
SW-5	None	Wal-Mart	Not Found	2930.36	Top of Casing	4.0	20.0	40.0	40.0	---	6/18/1992	2930.44
SW-6	None	Wal-Mart	Not Found	2927.91	Top of Casing	4.0	17.0	37.0	37.0	---	6/19/1992	2928.11
SW-7	None	Wal-Mart	Not Found	2921.52	Top of Casing	4.0	12.0	32.0	35.0	---	6/19/1992	2921.55
SW-8	None	Wal-Mart	Existing	2920.53	Top of Casing	2.0	9.5	19.6	20.0	---	7/1/1992	2918.13
SW-9	None	Wal-Mart	Existing	2922.82	Top of Casing	2.0	---	---	---	---	---	2917.55
SW-10	None	Wal-Mart	Existing	2922.94	Top of Casing	2.0	7.0	17.0	20.0	---	7/1/1992	2920.88
SW-11	None	Wal-Mart	Existing	2925.29	Top of Casing	2.0	7.0	17.0	20.0	---	7/2/1992	2924.30
SW-12	None	Wal-Mart	Existing	2919.41	Top of Casing	2.0	7.0	17.0	20.0	---	7/2/1992	2917.71
PW-1	None	Wal-Mart	Existing	2926.67	Top of PVC	2.0	14.5	24.6	25.0	---	3/22/1993	2925.25
PW-2C	None	Wal-Mart	Existing	2924.58	Top of PVC	2.0	15.0	25.0	25.0	---	3/23/1993	2925.07
PW-2D	None	Wal-Mart	Existing	2924.47	Top of PVC	2.0	12.0	22.0	22.0	---	3/23/1993	2925.02
PW-3	None	Wal-Mart	Existing	2922.55	Top of PVC	2.0	12.0	22.0	22.0	---	3/24/1993	2922.84
NW-1	None	Wal-Mart	Existing	2923.79	Top of PVC	2.0	10.0	30.0	30.5	---	9/29/1994	---
NW-2	None	Wal-Mart	Existing	2919.14	Top of PVC	2.0	11.5	26.5	26.9	---	9/26/1994	---
NW-3	None	Wal-Mart	Not Found	---	---	2.0	12.0	27.0	27.4	---	9/26/1994	---
NW-4	None	Wal-Mart	Existing	2925.77	Top of PVC	2.0	12.2	32.2	33.0	---	9/28/1994	---

**TABLE 2-2**  
**MONITORING WELL CONSTRUCTION DATA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
NTL-MW-3	None	Cemetery	Exisiting	2915.31	Top of PVC	2.0	5.2	15.2	15.2	15.2	12/21/2005	2912.27
NTL-MW-4	None	Cemetery	Exisiting	2917.76	Top of PVC	2.0	5.70	15.70	16.00	16.0	12/21/2005	2914.97
GWRM-1	MW-01 (BH#2)	Rocky Mountain Marine	Existing	No survey	Top of PVC	2.0	15.0	25.0	25.0	---	4/14/2005	---
GWRM-2	MW-02 (BH#4)	Rocky Mountain Marine	Existing	No survey	Top of PVC	2.0	15.0	25.0	25.0	---	4/14/2005	---
<b>Evergreen Water Public Water Supply Well</b>												
PWS-1	RR-GW-2, EW-1	130 Nicholson Drive	Existing	---	---	---	---	---	120.0	---	---	---
PWS-2		130 Nicholson Drive	Existing	---	---	---	---	---		---	---	---
<b>Industrial Wells</b>												
IW-1	None	Mokko	Existing	---	---	---	---	---	---	---	---	---
IW-2	None	Mokko	Existing	---	---	---	---	---	---	---	---	---
IW-3	None	Mokko	Existing	---	---	---	---	---	---	---	---	---
IW-4	None	Mokko	Existing	---	---	---	---	---	---	---	---	---
IW-5	None	Mokko	Existing	---	---	---	---	---	---	---	---	---
IW-6	None	Mokko	Existing	---	---	---	---	---	---	---	---	---
IW-7	None	KPT	Existing	---	---	---	---	---	---	---	---	---
IW-8	None	McElroy & Wilken	Existing	---	---	---	---	---	---	---	---	---
<b>Residential Wells</b>												
RW-1	Benson, RR-GW-1	460 Flathead Drive	Existing	---	---	---	---	---	38.0	---	---	---
RW-2	Rask; KPT-RW-2	450 Flathead Drive	Abandoned	---	---	---	---	---	74.0	---	6/24/1977	---
RW-3	Jenkins	275 Montclair Drive	Not Found	---	---	---	---	---	50.0	---	---	---
RW-4	Haugness, Brabham	95 Nicholson Drive	Abandoned	---	---	---	---	---	21.0	---	---	---
RW-5	Seaman	1028 East Idaho	Existing	---	---	---	---	---	25.0	---	---	---
RW-6	Nelson	Nicholson Drive	Existing	---	---	---	---	---	17.0	---	---	---
RW-7	Pennoyer	438 Flathead Drive	Existing	---	---	---	---	---	70.0	---	12/30/1963	---
RW-8	Batco, Mtn Springs Hot Tub	125 Flathead Drive	Existing	---	---	---	---	---	---	---	---	---
RW-9	Gipe	181 Montclair Drive	Existing	---	---	---	---	---	29.0	---	---	---
RW9a	Gipe	181 Montclair Drive	Existing	---	---	---	---	---	---	---	---	---

**TABLE 2-2**  
**MONITORING WELL CONSTRUCTION DATA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
RW-10	Rowlan	444 Flathead Drive	Existing	---	---	---	---	---	---	---	---	---
RW-11	Welliver	333 Montclair Drive	Existing	---	---	---	---	---	---	---	---	---
RW-12	Cameron	448 Flathead Drive	Existing	---	---	---	---	---	---	---	---	---
RW-13	Staneart	508 Flathead Dr	Existing	---	---	---	---	---	---	---	---	---
<b>Newly Installed Monitoring Wells</b>												
KRY100A	None	Mokko	Exisiting	2936.60	Top of PVC	2.0	6	26	28	29	5/19/2006	2936.71
KRY101A	None	Mokko	Exisiting	2941.08	Top of PVC	2.0	9	29	31	32	5/19/2006	2941.32
KRY101B	None	KPT	Exisiting	2940.80	Top of PVC	2.0	85	95	100	105	5/20/2006	2941.30
KRY102A	None	McElroy & Wilken	Exisiting	2945.27	Top of PVC	2.0	13	33	33.5	35	5/5/2006	2942.72
KRY102B	None	McElroy & Wilken	Exisiting	2945.26	Top of PVC	2.0	95	105	110	110	5/11/2006	2942.79
KRY103A	None	Mokko	Exisiting	2940.30	Top of PVC	2.0	5	25	27	27	5/22/2006	2937.33
KRY103B	None	Mokko	Exisiting	2939.94	Top of PVC	2.0	55	65	70	78	5/22/2006	2937.25
KRY104A	None	McElroy & Wilken	Exisiting	2946.68	Top of PVC	2.0	20	40	40.5	40.5	5/3/2006	2944.11
KRY105A	None	Mokko	Exisiting	2932.27	Top of PVC	2.0	5	25	27	27	5/22/2006	2929.38
KRY106A	None	Mokko	Exisiting	2932.25	Top of PVC	2.0	6	26	28	29	5/17/2006	2929.44
KRY106B	None	Mokko	Exisiting	2932.42	Top of PVC	2.0	73	83	88	88	5/19/2006	2929.58
KRY107A	None	McElroy & Wilken	Exisiting	2938.92	Top of PVC	2.0	9	29	29.5	35	5/2/2006	2936.32
KRY107B	None	McElroy & Wilken	Exisiting	2938.73	Top of PVC	2.0	121	131	136	136	5/5/2006	2936.17
KRY108A	None	KPT	Exisiting	2941.11	Top of PVC	2.0	10	30	32	32	5/19/2006	2938.50
KRY109A	None	438 Flathead Drive	Exisiting	2928.85	Top of PVC	2.0	5	25	27	27	5/31/2006	2925.65
KRY110A	None	KPT	Exisiting	2926.90	Top of PVC	2.0	35	55	55	58	5/11/2006	2924.29
KRY110B	None	KPT	Exisiting	2926.96	Top of PVC	2.0	76	86	91	95	5/18/2006	2924.33
KRY111A	None	McElroy & Wilken	Exisiting	2936.61	Top of PVC	2.0	5	25	25.5	35	5/2/2006	2934.43
KRY111B	None	McElroy & Wilken	Exisiting	2936.96	Top of PVC	2.0	123	133	138	138	5/8/2006	2934.64
KRY112A	None	McElroy & Wilken	Exisiting	2935.59	Top of PVC	2.0	9	29	29.5	35	5/3/2006	2929.97
KRY112B	None	McElroy & Wilken	Exisiting	2935.78	Top of PVC	2.0	110	120	125	125	5/4/2006	2933.09
KRY113A	None	KPT	Exisiting	2940.77	Top of PVC	4.0	15	35	37	37	5/23/2006	2938.17
KRY113B	None	KPT	Exisiting	2940.96	Top of PVC	2.0	102	112	117	120	5/22/2006	2938.07

**TABLE 2-2**  
**MONITORING WELL CONSTRUCTION DATA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
KRY114A	None	KPT	Exisiting	2934.65	Top of PVC	2.0	7	27	29	29	5/18/2006	2931.65
KRY114B	None	KPT	Exisiting	2935.09	Top of PVC	2.0	108	118	122	122	4/19/2006	2931.63
KRY115A	None	McElroy & Wilken	Exisiting	2936.78	Top of PVC	2.0	12	32	32.5	35	5/4/2006	2933.91
KRY115B	None	McElroy & Wilken	Exisiting	2936.68	Top of PVC	2.0	107	117	122	122.5	5/2/2006	2933.85
KRY116A	None	McElroy & Wilken	Exisiting	2931.53	Top of PVC	2.0	7	27	29.5	35	5/5/2006	2929.33
KRY116B	None	McElroy & Wilken	Exisiting	2931.97	Top of PVC	2.0	95.5	105.5	110.5	118	5/16/2006	2929.32
KRY117A	None	Reliance	Exisiting	2929.25	Top of PVC	2.0	5	29	27	29	4/20/2006	2926.08
KRY118A	None	Residential	Exisiting	2924.44	Top of PVC	2.0	6	26	28	28	6/1/2006	2924.67
KRY118B	None	Residential	Exisiting	2924.21	Top of PVC	2.0	95	105	110	115	6/2/2006	2924.50
KRY119A	None	Reliance	Exisiting	2929.69	Top of PVC	2.0	5	25	25	25	4/19/2006	2926.45
KRY121A	None	McElroy & Wilken	Exisiting	2937.39	Top of PVC	2.0	12	32	32.5	34	5/4/2006	2934.25
KRY121B	None	McElroy & Wilken	Exisiting	2937.35	Top of PVC	4.0	119	129	134	243	4/25/2006	2934.02
KRY122A	None	Western Bldg Center	Exisiting	2930.07	Top of PVC	2.0	7	27	29	29	5/31/2006	2930.48
KRY122B	None	Western Bldg Center	Exisiting	2929.80	Top of PVC	2.0	83	93	98	98	5/30/2006	2930.40
KRY123A	None	Reliance	Exisiting	2928.93	Top of PVC	2.0	5	25	25	25	4/21/2006	2925.78
KRY125A	None	Rocky Mountain Marine	Exisiting	2934.75	Top of PVC	2.0	5	25	25	25	4/26/2006	2935.07
KRY125B	None	Rocky Mountain Marine	Exisiting	2934.40	Top of PVC	2.0	116	126	126	138	6/1/2006	2934.90
KRY126A	None	Railroad Corridor	Exisiting	2927.54	Top of PVC	2.0	5	25	27	27	5/25/2006	2924.20
KRY127A	None	Railroad Corridor	Exisiting	2923.05	Top of PVC	2.0	5	25	27	27	5/31/2006	2920.35
KRY128A	None	Pacific Steel	Exisiting	2928.07	Top of PVC	2.0	5	25	27.5	30	5/5/2006	2928.25
KRY128B	None	Pacific Steel	Exisiting	2928.05	Top of PVC	2.0	145	155	160	160	5/25/2006	2928.34
KRY129A	None	Town Pump	Exisiting	2931.84	Top of PVC	2.0	9	29	31	31	5/24/2006	2932.23
KRY129B	None	Town Pump	Exisiting	2931.10	Top of PVC	2.0	127	137	142	142	6/5/2006	2931.47
KRY130A	None	Kari Dodge	Exisiting	2926.68	Top of PVC	2.0	25	45	45	45	4/27/2006	2927.02
KRY130B	None	Kari Dodge	Exisiting	2926.85	Top of PVC	2.0	153	163	168	169	6/4/2006	2927.19
KRY132A	None	KPT	Exisiting	2930.75	Top of PVC	2.0	6	26	28.5	29	5/17/2006	2927.70
KRY133A	None	KPT	Exisiting	2939.44	Top of PVC	2.0	8	28	30	30	5/9/2006	2936.01
KRY134A	None	KPT	Exisiting	2935.11	Top of PVC	2.0	8	28	30	30	5/8/2006	2932.15
KRY135A	None	Reliance	Exisiting	2931.22	Top of PVC	2.0	5	25	25	25	4/24/2006	2927.67

**TABLE 2-2**  
**MONITORING WELL CONSTRUCTION DATA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Alternate Name <sup>1</sup>	Property	Status <sup>2</sup>	Measuring Point Elevation (ft amsl) <sup>3</sup>	Measuring Point	Well Diameter (inches)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Borehole Depth (ft bgs)	Installation Date	Ground Elevation (ft amsl)
KRY136A	None	Reliance	Exisiting	2935.39	Top of PVC	2.0	5	25	25	35	4/24/2006	2932.42
KRY137A	None	Reliance	Exisiting	2929.90	Top of PVC	2.0	5	25	25	25	4/25/2006	2926.84
KRY138A	None	Reliance	Exisiting	2934.14	Top of PVC	2.0	5	25	25	35	4/25/2006	2930.74
KRY139A	None	Wal-Mart	Exisiting	2919.51	Top of PVC	4.0	7	27	29	29	5/24/2006	2919.83
KRY139B	None	Wal-Mart	Exisiting	2919.24	Top of PVC	2.0	166	176	181	181	6/10/2006	2919.63

Notes:

--- Denotes unknown well information

ft bgs Feet below ground surface

ft amsl Feet above mean sea level

KPT Kalispell Pole and Timber

<sup>1</sup> Alternate name based on historical information

<sup>2</sup> Status based on field verification and historical information

<sup>3</sup> Measuring point elevations based on 2006 survey for new wells and historical data for previously existing wells.

**TABLE 2-3**  
**QUALITY CONTROL SAMPLES**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY,**  
**AND YALE OIL FACILITIES**

Sample Type	Frequency of Analysis	Number Collected	Matrix
Matrix spike and matrix spike duplicate	5 percent <sup>a</sup>	21	Soil/Water
Field duplicate	5 percent	8	Water
Source water blank <sup>b</sup>	5 percent	3	Soil/Water
Trip blank (VOC samples only)	5 percent	41	Soil/Water
Equipment Rinsate blank	5 percent	22	Soil <sup>c</sup> /Water

**Notes:**

- a Matrix spike (MS) and matrix spike duplicate (MSD) samples were designated by the sample coordinator and also selected by the laboratory. Matrix duplicates replace MSDs for inorganic analyses.
  - b Source water blanks were collected from locations where water was obtained for decontamination and equipment rinsate purposes. Sources of water were Evergreen Water and Sewer District tap water, Culligan bottled deionized water, and Energy Laboratories laboratory-grade water.
  - c Pertains to rinsate collected after decontamination of equipment was completed.
- VOC Volatile organic compound

**TABLE 3-1**  
**FLOW STATISTICS FOR STREAMS IN THE KALISPELL VALLEY, MONTANA**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Station Number	Station Name	Drainage Area (sq/mi)	Type of Data Collected	Period of Record (Calendar Year)	Discharge for Period of Record				
					Mean Annual (ft <sup>3</sup> /s)	Maximum (ft <sup>3</sup> /s)	Date of Maximum	Minimum (ft <sup>3</sup> /s)	Date of Minimum
12363000	Flathead River at Columbia Falls	4,464	c, d, m, s, t	1922-23, 1928-	9,626	176,000	06-06-64	798	12-08-29
12363500	Flathead River near Kalispell	--	c	1968-69	--	--	--	--	--
12365500	Stillwater River near Kalispell	537 <sup>1</sup>	d	1907, 1922, 1928-31	192 <sup>2</sup>	2,750	05-22-22	26	11-11-29
12366000	Whitefish River near Kalispell	170	d	1928, 1929-1950, 1963-64, 1986-	190	1,580	06-24-74	4.5	10-18-34
12367500	Ashley Creek near Kalispell	195	c, d	1931-50, 1969-70, 1972-74	30.8	749	05-27-48	0	At times

Notes:

1 Corrected from U.S. Geological Survey Water-Supply Paper 1316 (1955)

2 Data for water year 1930

c Water chemistry

d Discharge

m Microbiological

s Suspended sediment

t Temperature

ft<sup>3</sup>/s Cubic feet per second

-- No data

Periods of record for stations that were being operated at least up to November 1994 are indicated by the first year of record followed by a dash only.

**TABLE 3-2**  
**GROUNDWATER SAMPLING FIELD MEASUREMENTS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

KRY June-July 2006 Monitoring Event								Comments
Well Number	Date	Static Water Level	Field parameters					
		Depth to Water (ft below TOC)	Temp (°C)	pH	SC (mS/cm)	ORP (mV)	DO (mg/L)	Turbity (NTU)
GW-1	6/22/2006	11.66	10.1	5.99	0.44	468.0	0.63	-5.7
GW-5	6/27/2006	17.76	10.1	6.96	0.96	102.0	0.06	0.8
GWRM-1	7/6/2006	18.85	14.3	6.87	0.45	-40.4	See note 4	4
GWRM-2	7/6/2006	17.62	12.0	6.36	0.40	35.0	See note 4	-4
GWRR-1	6/29/2006	12.08	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3 Product present.
GWRR-2	7/5/2006	16.62	13.2	6.68	0.48	-25.0	See note 4	1608
GWRR-3	7/6/2006	11.64	10.8	6.71	1.14	-101.1	7.2	912
GWRR-4	6/29/2006	11.90	11.6	6.79	0.86	209.0	See note 4	-8
GWRR-5	7/5/2006	16.50	13.0	6.97	0.35	-81.2	10.4	926
GWRR-6	7/6/2006	10.19	11.0	6.72	1.18	191.0	7.4	458
GWRR-7	7/6/2006	12.60	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3 Product present, sampled with peristaltic pump at 15.5.' BTOC.
GWRR-8	6/29/2006	21.61	11.7	6.95	0.43	165.0	2.2	918
GWRR-9	7/6/2006	18.44	10.1	6.49	0.52	-91.0	1	907
GWY-10	7/6/2006	18.10	11.4	7.38	0.33	1.5	See note 4	2
GWY-12	7/7/2006	17.27	9.8	6.55	0.43	-37.0	0.3	30
GWY-13	7/6/2006	16.85	11.8	6.53	0.54	-43.0	5.32	47
GWY-14	7/6/2006	22.17	10.6	6.57	0.47	92.0	0.32	27
GWY-3	7/6/2006	14.02	10.9	6.48	0.95	125.0	6.01	32
GWY-4	7/6/2006	18.35	9.6	6.27	0.67	69.0	0.38	32
IW-1	6/21/2006	See note 2	9.7	7.29	0.34	48.0	0.87	-1.8 Standard cap.
IW-2	6/21/2006	See note 2	9.7	7.25	0.34	111.0	0.44	-2.7 Sampled from riser-stand pipe adjacent to well.
IW-3		N/A						Blockage in well casing prevented access.
IW-4	6/22/2006	See note 2	10.8	7.02	0.37	-55.0	0.09	-2.4 Sampled from hydrant hose.
IW-5	6/21/2006	See note 2	8.7	7.40	0.28	-87.0	0.11	-2 Sampled well by attaching 50-foot garden hose to spigot directly from well plumbing inside building.
IW-6	6/21/2006	See note 2	8.3	7.56	0.28	27.0	0.61	6.5 Sampled well by attaching 50-foot hose to stand-pipe spigot next to well.
IW-7	6/22/2006	See note 2	10.8	7.41	0.34	132.0	0.58	-0.3 Sampled from faucet on south side of shack - outside.
IW-8	6/22/2006	See note 2	9.4	7.42	0.39	148.0	1.08	-1.5 Sampled from overflow hose and valve.
KPT-1	6/22/2006	17.41	10.1	6.66	0.40	108.0	0.64	14.9
KPT-10	6/27/2006	7.74	13.1	6.51	0.22	55.9	0.1	24.6
KPT11	6/28/2006	8.45	11.0	6.58	0.20	390.0	See note 4	
KPT12	6/23/2006	17.32	11.1	6.74	0.36	373.0	0.32	-5.5
KPT13	6/28/2006	7.63	12.8	6.56	0.25	295.0	0.13	3.6
KPT-14	6/27/2006	8.50	10.9	6.43	0.34	71.0	0.06	35
KPT-15	6/27/2006	17.96	11.7	6.94	0.34	-3.0	0.58	56
KPT-16	6/23/2006	18.24	10.9	6.59	0.45	124.0	2.7	12.7
KPT-17	6/29/2006	10.49	11.7	6.57	1.41	-74.0	See note 4	0.1
KPT-18	6/28/2006	11.77	10.8	5394.00	0.85	-26.0	See note 4	9.1
KPT-19	6/27/2006	15.49/15.52	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3 Product present.
KPT2	6/28/2006	16.88	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3 Product present.
KPT-20	6/28/2006	15.16	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3 Product present.
KPT-21	6/28/2006	16.29	11.9	6.83	0.91	169.0	1.48	919
KPT-22	6/28/2006	9.28	13.0	6.06	0.31	320.0	See note 4	4.1
KPT-3	6/28/2006	15.97	11.9	6.65	0.41	186.0	1.51	918
KPT-4	6/28/2006	17.02	12.1	6.58	0.50	267.0	1.74	918
KPT-5	6/23/2006	16.04	9.7	6.58	0.43	142.0	3.09	30.2
KPT-6	6/23/2006	14.50	10.4	6.92	0.36	258.0	0.04	-1.4
KPT-7	6/23/2006	N/A	9.4	7.18	0.39	216.0	0.03	2.7
KPT-8	6/23/2006	N/A	10.3	6.89	0.33	432.0	0.31	0.6
KPT-9	6/28/2006	5.52	12.08	6.60	0.33	223.0	0.13	-6.2
KRY100A	6/15/2006	9.38	8.2	7.12	0.34	-11.2	0.45	N/A
KRY101A	6/14/2006	15.62	9.4	9.04	0.34	-68.0	0.17	20
KRY101B	6/15/2006	15.61	9.4	7.52	0.27	132.0	1.62	62
KRY102A	6/13/2006	23.35	10.0	6.93	0.42	372.0	2.88	0
KRY102B	6/13/2006	23.30	12.9	8.23	0.34	11.0	2.16	180
KRY103A	6/15/2006	11.79	10.2	5.95	0.70	-31.0	0.22	317
KRY103B	6/15/2006	11.39	8.9	7.43	0.30	161.0	1.94	397-470
KRY104A	6/14/2006	25.31	9.1	7.54	0.30	289.0	2.96	143
KRY105A	6/15/2006	6.52	9.1	6.70	0.32	83.0	0.89	51
KRY106A	6/15/2006	9.51	9.5	6.69	0.34	27.0	1.18	81
KRY106B	6/15/2006	9.44	9.6	6.75	0.33	73.0	0.95	189
KRY107A	6/16/2006	17.30	10.2	6.98	0.40	208.0	2.36	-3
KRY107B	6/16/2006	19.71	9.6	7.32	0.33	223.0	1.15	19
KRY108A	6/22/2006	18.63	10.1	6.51	0.42	147.0	2.52	14.2
KRY109A	6/16/2006	9.27	15.6	8.98	0.21	96.0	4.91	142
KRY110A	6/15/2006	See note 1	9.0	7.22	0.33	113.0	0.54	18

**TABLE 3-2**  
**GROUNDWATER SAMPLING FIELD MEASUREMENTS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

KRY June-July 2006 Monitoring Event								Comments
Well Number	Date	Depth to Water (ft below TOC)	Field parameters					
			Temp (°C)	pH	SC (mS/cm)	ORP (mV)	DO (mg/L)	Turbity (NTU)
KRY110B	6/16/2006	8.06	9.5	7.27	0.33	94.0	0.62	903
KRY111A	6/16/2006	18.78	10.1	6.20	0.70	-58.0	0.16	79.8
KRY111B	6/16/2006	17.80	10.2	6.77	0.36	95.0	0.47	109
KRY112A	6/14/2006	17.60	9.2	8.81	0.48	184.0	6.28	29.5
KRY112B	6/14/2006	17.94	9.7	8.54	0.41	-97.0	0.95	135
KRY113A	6/22/2006	18.28	11.5	7.51	0.45	37.3	2.9	30.9
KRY113B	6/22/2006	18.75	11.9	7.66	0.33	-6.8	3.02	76
KRY114A	6/24/2006	18.10	See note 3	See note 3	See note 3	See note 3	See note 3	See note 3 Product present.
KRY114B	7/5/2006	18.28	10.5	6.80	0.35	114.0	2.71	132
KRY115A	6/13/2006	20.00	11.1	6.14	0.36	470.0	1.27	223
KRY115B	6/13/2006	19.69	12.5	9.78	0.38	-28.0	0.56	101
KRY116A	6/14/2006	14.32	10.0	9.25	0.35	216.0	8.18	118
KRY116B	6/14/2006	14.88	9.5	7.43	0.32	230.0	1.98	20
KRY118A	7/5/2006	11.15	9.62	6.76	0.32	167.00	8.41	231.00
KRY118B	7/5/2006	11.43	10.74	6.93	0.32	55.00	3.27	175.00
KRY121A	6/20/2006	20.32	9.9	6.97	0.42	-91.3	0.12	10.4
KRY121B	6/28/2006	20.89	12.0	7.66	0.36	-261.0	0.45	182
KRY122A	6/26/2006	13.29	14.0	6.31	0.99	507.0	1.56	53.9
KRY122B	6/28/2006	13.19	10.2	6.92	0.35	44.0	1.11	155
KRY123A	6/21/2006	13.28	9.2	6.70	0.34	157.0	1.67	18.3
KRY125A	6/26/2006	15.44	12.1	6.42	1.36	70.0	3.51	57
KRY125B	6/26/2006	21.45	11.89	6.830	0.37	71.0	1.59	48
KRY126A	6/21/2006	11.81	9.8	6.50	0.67	155.0	3.8	78
KRY127A	6/21/2006	7.31	9.8	6.89	0.31	151.0	3.23	60.5
KRY128A	6/27/2006	13.81	11.4	5.77	0.95	411.0	1.81	17
KRY128B	6/28/2006	15.73	12.0	7.00	0.35	-211.0	0.4	195
KRY129A	6/27/2006	14.18	12.0	6.93	1.04	125.0	3.84	516
KRY129B	6/21/2006	18.52	12.8	6.78	0.42	40.0	1.3	138
KRY129B	6/22/2006	18.75	11.9	7.66	0.33	-6.8	3.02	76
KRY130A	6/20/2006	12.65	9.9	7.34	0.45	196.0	1.11	1.4
KRY130B	6/22/2006	13.22	11.7	7.30	0.29	377.0	1.79	53
KRY139B	6/27/2006	8.91	12.2	6.95	0.35	85.0	1.62	565
KRY139A	6/27/2006	9.50	11.0	8.34	1.50	-99.0	0.38	63
KRYIW3		N/A						Blockage in well casing prevented access.
KRYRW9	6/27/2006	See note 2	8.4	7.61	0.31	8.0	1.33	Irrigation well.
CLCW1	7/6/2006	22.48	10.8	6.44	0.51	70.0	0.98	40
NTLMW04	6/29/2006	8.73	11.8	6.42	0.95	-71.0	1.17	53
PW-1	7/7/2006	18.24	11.6	6.71	1.60	-96.0	1.32	911
PW-3	6/29/2006	15.02	10.6	6.66	0.53	65.0	1.69	41
PWS1	6/27/2006	See note 2	16.8	7.65	0.32	130.7	6.39	0.5 Water supply well. Sampled at tap.
PWS2	6/27/2006	See note 2	9.6	7.90	0.31	174.9	See note 4	-3.5 Water supply well. Sampled at spigot.
RW-1	6/28/2006	See note 2	7.8	7.51	0.30	113.7	3.55	-0.3 Water supply well. Sampled at spigot.
RW-10	7/6/2006	See note 2	14.2	6.93	0.33	106.0	5.43	58 Sample collected from tap.
RW-11	6/28/2006	See note 2	9.0	7.86	0.29	115.0	6.6	2.1 Residential well. Sampled at tap.
RW12	6/28/2006	See note 2	9.7	7.80	0.31	105.7	6.95	-0.7 Sample collected from standpipe closest to well.
RW-6	6/29/2006	See note 2	10.9	6.92	0.42	-65.0	12.9	912 Residential well.
RW8	6/28/2006	See note 2	10.5	7.68	0.35	60.8	5.8	28.7 Water supply well. Sampled at tap outside of building.
RW9	6/23/2006	See note 2	9.8	7.54	0.33	116.4	3.57	-0.4 Well is sandpoint inside house.
SW-9	6/29/2006	13.02	10.3	6.25	1.16	-14.0	0.42	27

Notes:

- (1) Water level not recorded due to an oversight
- (2) Residential/irrigation well, sample taken from tap
- (3) Product present, field parameters unavailable
- (4) Negative dissolved oxygen recorded because of instrument calibration error

TOC : top of casing oC = degrees Celsius mS/cm = microsiemens per centimeter mV = millivolts mg/L = milligrams per liter

NTU : Nephelometric turbidity unit

N/A : Not available

SC : Specific conductance

pH : The measure of the molar concentration of hydrogen ions in solution expressed in the negative base 10 logarithm

ORP : Oxidation/reduction potential

DO : Dissolved oxygen

**TABLE 3-3**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Information						July 2006				August 2006				October 2006			
Well Number	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Measuring Point	Measuring Point Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)
CLCW-1	---	---	---	Top of PVC	2935.61			22.70	2912.91			24.37	2911.24			23.64	2911.97
GW-1	11.9	21.9	24.0	Top of PVC	2933.94			13.20	2920.74			14.36	2919.58			17.71	2916.23
GW-5	14.0	24.0	24.5	Top of PVC	2934.64			18.90	2915.74			20.25	2914.39			20.16	2914.48
GWRM-1	15.0	25.0	25.0	Top of PVC	Unknown			19.07	---			---	---			---	---
GWRM-2	15.0	25.0	25.0	Top of PVC	Unknown			17.83	---			---	---			---	---
GWRR-1	11.9	21.9	24.0	Top of PVC	2929.32			13.00	2916.32			14.3	2915.02			14.23	2915.09
GWRR-2	12.85	22.85	25.0	Top of PVC	2932.54			16.94	2915.60			18.33	2914.21			18.21	2914.33
GWRR-3	8.65	18.65	20.0	Top of PVC	2928.75			11.63	2917.12			11.65	2917.10	11.68	0.01	11.69	2917.07
GWRR-4	4.75	14.75	20.0	Top of PVC	2931.76			12.10	2919.66			12.46	2919.30			13.44	2918.32
GWRR-5	13.0	23.0	23.3	Top of PVC	2932.36	16.81	0.03	16.84	2915.54			18.15	2914.21			18.02	2914.34
GWRR-6	4.75	14.75	25.0	Top of PVC	2930.34			10.19	2920.15			10.37	2919.97			10.89	2919.45
GWRR-7	6.25	16.25	16.5	Top of PVC	2931.12	11.56	0.45	12.01	2919.48	11.74	0.02	11.76	2919.38	12.15	0.38	12.53	2918.90
GWRR-8	20.5	30.5	32.0	Top of PVC	2938.15			22.48	2915.67			23.85	2914.30			23.76	2914.39
GWRR-9	16.0	26.0	28.0	Top of PVC	2934.27		locked			20.08	0.03	20.11	2914.18			19.98	2914.29
GWY-3	10.0	30.0	30.0	Top of PVC	2934.92			13.72	2921.20			14.64	2920.28			15.57	2919.35
GWY-4	10.0	30.0	30.0	Top of PVC	2934.06			18.56	2915.50			19.99	2914.07			19.88	2914.18
GWY-10	10.0	30.0	30.0	Top of PVC	2933.75			18.27	2915.48			19.68	2914.07			19.6	2914.15
GWY-12	10.0	30.0	30.0	Top of PVC	2933.13			17.55	2915.58			18.98	2914.15			18.89	2914.24
GWY-13	10.0	30.0	30.0	Top of PVC	2932.56			17.03	2915.53			18.46	2914.10			18.36	2914.20
GWY-14	10.0	30.0	30.0	Top of PVC	2934.62			22.41	2912.21			24	2910.62			23.21	2911.41
KPT-1	13.0	28.0	29.0	Top of PVC	2939.84			18.99	2920.85			20.15	2919.69			20.51	2919.33
KPT-2	13.0	28.0	29.0	Top of Steel	2938.55			17.78	2920.77			18.99	2919.56			19.34	2919.21
KPT-3	13.0	28.0	29.0	Top of PVC	2937.17	16.88	0.05	16.93	2920.28			18.09	2919.08	18.39	0.06	18.45	2918.77
KPT-4	13.0	28.0	29.0	Top of PVC	2935.44			17.95	2917.49			19.31	2916.13			19.44	2916.00
KPT-5	13.0	28.0	29.0	Top of PVC	2934.66			17.66	2917.00			19.09	2915.57			19.09	2915.57
KPT-6	13.0	28.0	29.0	Top of PVC	2936.18			15.95	2920.23			17.15	2919.03			17.46	2918.72
KPT-7	12.5	27.5	28.5	Top of PVC	2935.31			17.27	2918.04			18.48	2916.83			18.56	2916.75
KPT-8	110.0	120.0	122.0	Top of PVC	2935.16			17.18	2917.98			18.41	2916.75			18.51	2916.65
KPT-9	6.0	16.0	23.0	Top of Steel	2925.77			6.39	2919.38			7.41	2918.36			7.68	2918.09
KPT-10	8.0	23.0	27.0	Top of PVC	2925.35			8.90	2916.45			10.28	2915.07			10.19	2915.16
KPT-11	52.0	72.0	74.0	Top of PVC	2925.84			9.48	2916.36			10.84	2915.00			10.7	2915.14
KPT-12	14.0	24.0	24.5	Top of PVC	2939.51			18.70	2920.81			19.93	2919.58			20.25	2919.26
KPT-13	109.0	119.0	120.0	Top of PVC	2927.55			8.59	2918.96			9.68	2917.87			9.84	2917.71
KPT-14	96.0	106.0	109.0	Top of PVC	2925.95			9.64	2916.31			10.96	2914.99			10.88	2915.07
KPT-15	101.0	111.0	117.0	Top of PVC	2934.80			19.12	2915.68			20.48	2914.32			20.37	2914.43
KPT-16	14.0	29.0	29.5	Top of PVC	2935.66			19.91	2915.75			21.27	2914.39			21.21	2914.45
KPT-17	7.5	12.5	13.0	Top of PVC	2929.58			10.59	2918.99			10.7	2918.88			11.11	2918.47
KPT-18	24.0	34.0	34.5	Top of PVC	2929.71			12.55	2917.16			12.83	2916.88			13.11	2916.60
KPT-19	13.00	23.00	23.50	Top of PVC	2932.89			16.63	2916.26			17.98	2914.91			17.88	2915.01
KPT-20	10.00	20.00	20.00	Top of PVC	2932.90			16.18	2916.72			17.48	2915.42			17.46	2915.44
KPT-21	8.00	23.00	23.00	Top of PVC	2933.50			17.30	2916.20			18.64	2914.86			18.56	2914.94
KPT-22	6.00	16.00	16.00	Top of PVC	2926.78			10.33	2916.45			11.67	2915.11			11.58	2915.20

**TABLE 3-3**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Information						July 2006				August 2006				October 2006			
Well Number	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Measuring Point	Measuring Point Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)
KRY100A	6	26	28	Top of PVC	2936.60			10.06	2926.54			10.88	2925.72			11.2	2925.40
KRY101A	9	29	31	Top of PVC	2941.08			16.22	2924.86			17.31	2923.77			17.69	2923.39
KRY101B	85	95	100	Top of PVC	2940.80			16.29	2924.51			17.4	2923.40			17.75	2923.05
KRY102A	13	33	33.5	Top of PVC	2945.27			23.91	2921.36			25.15	2920.12			25.52	2919.75
KRY102B	95	105	110	Top of PVC	2945.26			23.89	2921.37			25.11	2920.15			25.49	2919.77
KRY103A	5	25	27	Top of PVC	2940.30			12.69	2927.61			13.45	2926.85			13.77	2926.53
KRY103B	55	65	70	Top of PVC	2939.94			12.23	2927.71			12.98	2926.96			13.13	2926.81
KRY104A	20	40	40.5	Top of PVC	2946.68			25.84	2920.84			27.18	2919.50			27.57	2919.11
KRY105A	5	25	27	Top of PVC	2932.27			7.37	2924.90			8.3	2923.97	8.55	0.01	8.56	2923.72
KRY106A	6	26	28	Top of PVC	2932.25			10.28	2921.97			11.45	2920.80			11.77	2920.48
KRY106B	73	83	88	Top of PVC	2932.42			10.22	2922.20			11.4	2921.02			11.67	2920.75
KRY107A	9	29	29.5	Top of PVC	2938.92			18.10	2920.82			19.32	2919.60			19.64	2919.28
KRY107B	121	131	136	Top of PVC	2938.73			20.55	2918.18			21.85	2916.88			22.07	2916.66
KRY108A	10	30	32	Top of PVC	2941.11			20.18	2920.93			21.35	2919.76			21.73	2919.38
KRY109A	5	25	27	Top of PVC	2928.85			10.10	2918.75			10.7	2918.15			10.99	2917.86
KRY110A	35	55	55	Top of PVC	2926.90			8.17	2918.73			9.13	2917.77			9.42	2917.48
KRY110B	76	86	91	Top of PVC	2926.96			9.01	2917.95			10.04	2916.92			10.2	2916.76
KRY111A	5	25	25.5	Top of PVC	2936.61			19.80	2916.81			21.21	2915.40			21.23	2915.38
KRY111B	123	133	138	Top of PVC	2936.96			18.82	2918.14			21	2915.96			20.21	2916.75
KRY112A	9	29	29.5	Top of PVC	2935.59			18.50	2917.09			20.08	2915.51			20.22	2915.37
KRY112B	110	120	125	Top of PVC	2935.78			18.75	2917.03			20.04	2915.74			20.23	2915.55
KRY113A	15	35	37	Top of PVC	2940.77			19.72	2921.05			20.98	2919.79			21.32	2919.45
KRY113B	102	112	117	Top of PVC	2940.96			20.23	2920.73			21.53	2919.43			21.81	2919.15
KRY114A	7	27	29	Top of PVC	2934.65	18.55	0.85	19.40	2915.95	19.55	0.94	20.49	2914.94	19.54	0.04	19.58	2915.10
KRY114B	108	118	122	Top of PVC	2935.09			18.65	2916.44			19.85	2915.24			19.75	2915.34
KRY115A	12	32	32.5	Top of PVC	2936.78			21.05	2915.73			22.42	2914.36			22.31	2914.47
KRY115B	107	117	122	Top of PVC	2936.68			20.63	2916.05			21.97	2914.71			22.04	2914.64
KRY116A	7	27	29.5	Top of PVC	2931.53			15.10	2916.43			16.42	2915.11	16.67	0.01	16.68	2914.86
KRY116B	95.5	105.5	110.5	Top of PVC	2931.97			15.70	2916.27			17.03	2914.94			17.21	2914.76
KRY117A	5	29	27	Top of PVC	2929.25			13.75	2915.50			15.07	2914.18			14.98	2914.27
KRY118A	6	26	28	Top of PVC	2924.44			11.25	2913.19			12.44	2912.00			11.45	2912.99
KRY118B	95	105	110	Top of PVC	2924.21			11.45	2912.76			12.54	2911.67	11.23	0.01	11.24	2912.98
KRY119A	5	25	25	Top of PVC	2929.69			13.75	2915.94			14.08	2915.61	14.23	0.01	14.24	2915.46
KRY121A	12	32	32.5	Top of PVC	2937.39			21.80	2915.59			23.18	2914.21			23.04	2914.35
KRY121B	119	129	134	Top of PVC	2937.35			21.90	2915.45			23.26	2914.09			23.1	2914.25
KRY122A	7	27	29	Top of PVC	2930.07			14.23	2915.84			15.65	2914.42	15.95	0.01	15.96	2914.12
KRY122B	83	93	98	Top of PVC	2929.80			14.12	2915.68			15.47	2914.33			15.68	2914.12
KRY123A	5	25	25	Top of PVC	2928.93			16.40	2912.53			17.85	2911.08			16.41	2912.52
KRY125A	5	25	25	Top of PVC	2934.75			15.50	2919.25			15.81	2918.94			16.29	2918.46
KRY125B	116	126	126	Top of PVC	2934.40			22.84	2911.56			24.21	2910.19			24.27	2910.13
KRY126A	5	25	27	Top of PVC	2927.54			15.05	2912.49			16.55	2910.99			15.06	2912.48
KRY127A	5	25	27	Top of PVC	2923.05			11.08	2911.97			13.6	2909.45			10.53	2912.52
KRY128A	5	25	27.5	Top of PVC	2928.07			14.69	2913.38			16.24	2911.83			14.92	2913.15
KRY128B	145	155	160	Top of PVC	2928.05			16.56	2911.49			17.98	2910.07			17	2911.05
KRY129A	9	29	31	Top of PVC	2931.84			14.28	2917.56			12.69	2919.15			11.55	2920.29
KRY129B	127	137	142	Top of PVC	2931.10			20.74	2910.36			22.1	2909.00			21.91	2909.19
KRY130A	25	45	45	Top of PVC	2926.68			15.80	2910.88			16.17	2910.51			16.14	2910.54
KRY130B	153	163	168	Top of PVC	2926.85			16.14	2910.71			17.51	2909.34			16.55	2910.30
KRY132A	6	26	28.5	Top of PVC	2930.75			9.50	2921.25			10.51	2920.24			10.82	2919.93
KRY133A	8	28	30	Top of PVC	2939.44			18.61	2920.83			19.82	2919.62			20.15	2919.29
KRY134A	8	28	30	Top of PVC	2935.11			18.72	2916.39			20.05	2915.06			19.98	2915.13
KRY135A	5	25	25	Top of PVC	2931.22	13.10	2.15	15.25	2917.75	13.83	0.17	14	2917.36	13.84	2.62	16.46	2916.93
KRY136A	5	25	25	Top of PVC	2935.39	19.67	0.47	20.14	2915.64	20.98	0.39	21.37	2914.34	20.85	0.28	21.13	2914.49
KRY137A	5	25	25	Top of PVC	2929.90			11.25	2918.65			11.5	2918.40			12.07	2917.83

**TABLE 3-3**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Well Information				July 2006				August 2006				October 2006					
	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Measuring Point	Measuring Point Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	SWL (ft bgs)	GW Elevation (ft amsl)	
KRY138A	5	25	25	Top of PVC	2934.14	19.61	0.04	19.65	2914.52	20.87	0.01	20.88	2913.27			20.8	2913.34	
KRY139A	7	27	29	Top of PVC	2919.51			10.95	2908.56			12.15	2907.36			12.41	2907.10	
KRY139B	166	176	181	Top of PVC	2919.24				10.23	2909.01			11.52	2907.72			11.45	2907.79
NTL-MW-3	5.2	15.2	15.2	Top of PVC	2915.31			--	--			7.08	2908.23			6.94	2908.37	
NTL-MW-4	5.70	15.70	16.00	Top of PVC	2917.76			--	--			11.19	2906.57			11.39	2906.37	
NW-1	10.0	30.0	30.5	Top of PVC	2923.79			16.54	2907.25			--	--			--	--	
NW-2	11.5	26.5	26.9	Top of PVC	2919.14			13.47	2905.67			--	--			--	--	
NW-4	12.2	32.2	33.0	Top of PVC	2925.77			18.58	2907.19			--	--			--	--	
PW-1	14.5	24.6	25.0	Top of PVC	2926.67			18.92	2907.75			20.39	2906.28			19.78	2906.89	
PW-2C	15.0	25.0	25.0	Top of PVC	2924.58			18.46	2906.12			--	--			--	--	
PW-2D	12.0	22.0	22.0	Top of PVC	2924.47			18.51	2905.96			--	--			--	--	
PW-3	12.0	22.0	22.0	Top of PVC	2922.55			16.04	2906.51			17.61	2904.94			16.79	2905.76	
SW-9	10.0	20.0	20.0	Top of PVC	2922.82			14.11	2908.71			15.49	2907.33			15.49	2907.33	

Notes:

Water level corrected for LNAPL in wells with LNAPL

Correction factor for wells with LNAPL  $h = h_m + (H_o (d_o/d_w))$

$h_c$  Hydraulic head corrected

$h_m$  Measured elevation of hydrocarbon-water interface

$H_o$  Thickness of hydrocarbon layer

$d_o$  Hydrocarbon density (for diesel = 0.827)

$d_w$  Water density (assumed = 1.0)

ft Feet

bgs Below ground surface

amsl Above mean sea level

GW Groundwater

PVC Polyvinyl chloride (well casing)

LNAPL Light nonaqueous phase liquid (petroleum hydrocarbon, PCP)

SWL Static water level

July water levels collected on July 11-12, 2006

August water levels collected on August 1-3, 2006

October water levels collected on October 1-3, 2006

--- Not measured

**TABLE 3-4**  
**VERTICAL HYDRAULIC GRADIENTS FROM ALLUVIAL WELL PAIRS**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Information				July 2006			August 2006		
Well Number	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Well Depth (ft bgs)	Groundwater Elevation (ft amsl)	Elevation Difference (ft)	Gradient Direction	Groundwater Elevation (ft amsl)	Elevation Difference (ft)	Gradient Direction
KRY101A	9	29	31	2924.86	0.35	Downward	2923.77	0.37	Downward
KRY101B	85	95	100	2924.51			2923.40		
KRY102A	13	33	33.5	2921.36	-0.01	Upward	2920.12	-0.03	Upward
KRY102B	95	105	110	2921.37			2920.15		
KRY103A	5	25	27	2927.61	-0.10	Upward	2926.85	-0.11	Upward
KRY103B	55	65	70	2927.71			2926.96		
KRY106A	6	26	28	2921.97	-0.23	Upward	2920.80	-0.22	Upward
KRY106B	73	83	88	2922.20			2921.02		
KRY107A	9	29	29.5	2920.82	2.64	Downward	2919.60	2.72	Downward
KRY107B	121	131	136	2918.18			2916.88		
KRY110A	35	55	55	2918.73	0.78	Downward	2917.77	0.85	Downward
KRY110B	76	86	91	2917.95			2916.92		
KRY111A	5	25	25.5	2916.81	-1.33	Upward	2915.40	-0.56	Upward
KRY111B	123	133	138	2918.14			2915.96		
KRY112A	9	29	29.5	2917.09	0.06	Downward	2915.51	-0.23	Upward
KRY112B	110	120	125	2917.03			2915.74		
KRY113A	15	35	37	2921.05	0.32	Downward	2919.79	0.36	Downward
KRY113B	102	112	117	2920.73			2919.43		
KRY114A	7	27	29	2915.95	-0.49	Upward	2914.94	-0.30	Upward
KRY114B	108	118	122	2916.44			2915.24		
KRY115A	12	32	32.5	2915.73	-0.32	Upward	2914.36	-0.35	Upward
KRY115B	107	117	122	2916.05			2914.71		
KRY116A	7	27	29.5	2916.43	0.16	Downward	2915.11	0.17	Downward
KRY116B	95.5	105.5	110.5	2916.27			2914.94		
KRY118A	6	26	28	2913.19	0.43	Downward	2912.00	0.33	Downward
KRY118B	95	105	110	2912.76			2911.67		
KRY121A	12	32	32.5	2915.59	0.14	Downward	2914.21	0.12	Downward
KRY121B	119	129	134	2915.45			2914.09		
KRY122A	7	27	29	2915.84	0.16	Downward	2914.42	0.09	Downward
KRY122B	83	93	98	2915.68			2914.33		
KRY125A	5	25	25	2919.25	7.69	Downward	2918.94	8.75	Downward
KRY125B	116	126	126	2911.56			2910.19		
KRY128A	5	25	27.5	2913.38	1.89	Downward	2911.83	1.76	Downward
KRY128B	145	155	160	2911.49			2910.07		
KRY129A	9	29	31	2917.56	7.20	Downward	2919.15	10.15	Downward
KRY129B	127	137	142	2910.36			2909.00		
KRY130A	25	45	45	2910.88	0.17	Downward	2910.51	1.17	Downward
KRY130B	153	163	168	2910.71			2909.34		
KRY139A	7	27	29	2908.56	-0.45	Upward	2907.36	-0.36	Upward
KRY139B	166	176	181	2909.01			2907.72		

Notes:

ft bgs      feet below ground surface

ft amsl      feet above mean seal level

July water levels collected on July 11-12, 2006

August water levels collected on August 1-3, 2006

Vertical hydraulic gradients are in feet/foot

+ = downward direction

- = upward direction

0 = essentially no measurable vertical gradient

**TABLE 3-5**  
**SUMMARY OF AQUIFER TEST RESULTS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Well Diameter (inches)	Aquifer Zone <sup>(1)</sup>	Aquifer Thickness (feet)	Test Date	Test Type Conducted	Test Duration (minutes)	Pumping Rate (gpm)	Maximum Drawdown (feet)	Solution Method	Transmissivity (ft <sup>2</sup> /day)	Hydraulic Conductivity (ft/day)
KRY108A	2	Upper Unconfined	91	8/21/06	Pumping Well Drawdown	94	6.1	0.03	NC <sup>(2)</sup>	NC <sup>(2)</sup>	NC <sup>(2)</sup>
KRY113B	2	Lower Unconfined	91	8/21/06	Pumping Well Drawdown	112	6.1	1.1	Theis Unconfined	5,500	60
KRY121A	2	Upper Unconfined	106	8/18/06	Pumping Well Drawdown	56	6.1	0.1	NC <sup>(2)</sup>	NC <sup>(2)</sup>	NC <sup>(2)</sup>
KRY121B	4	Lower Unconfined	106	8/16/06	Pumping Well Drawdown	42	30	1.1	Theis Unconfined	34,600	326
KRY139A	4	Upper Unconfined	164	8/22/06	Pumping Well Drawdown	105	5.8	2.97	Theis Unconfined	2,800	17
KRY139A	4	Upper Unconfined	14.6 <sup>(3)</sup>	8/22/06	Pumping Well Recovery	15	5.8	2.97	Theis Confined	138	9
KRY139B	2	Lower Unconfined	164	8/22/06	Pumping Well Drawdown	84	6.1	1.3	Theis Unconfined	8,941	55

Notes:

(1) Upper Unconfined refers to wells completed in upper portion of unconfined aquifer. Lower Unconfined refers to wells completed in lower portion of unconfined aquifer.

(2) NC = not calculated Aquifer tests at wells KRY108A and KRY121A yielded insufficient drawdown to complete the analysis.

(3) Calculation of transmissivity and hydraulic conductivity used the length of the saturated portion of the well screen.

Solution Methods: Theis (1935)

Gpm Gallons per minute      ft<sup>2</sup>/d      Feet squared per day

**TABLE 3-6**  
**SUMMARY OF PREVIOUS AQUIFER TESTING RESULTS**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY, AND YALE OIL FACILITIES**

Well Number	Well Diameter (inches)	Screen Interval (feet bgs)	Aquifer Zone (1)	Test Type Conducted	Solution Method	Hydraulic Conductivity (ft/day)
Data from RETEC 1995 Site Investigation Report for KPT						
KPT-1	4	13-28	Upper unconfined	Slug Test	Bower/Rice	34
KPT-5	4	13-28	Upper unconfined	Slug Test	Bower/Rice	37
KPT-7	4	12.5-27.5	Upper unconfined	Slug Test	Bower/Rice	34
KPT-8	4	110-120	Lower unconfined	Slug Test	Bower/Rice	43
GW-1	4	12-22	Upper unconfined	Slug Test	Bower/Rice	48
Data from Spratt & Associates 1992 Phase III Environmental Site Assessment Seaman Mobile Homes						
EH-1	2	3-11	Upper unconfined	Pumping test	NA	12
EH-2	2	8-18	Upper unconfined	Pumping test	NA	4
EH-3	2	6-16	Upper unconfined	Pumping test	NA	0.4
MW-14	4	10-30	Upper unconfined	Slug Test	NA	322
SW-5	4	20-40	Upper unconfined	Slug Test	NA	0.5
SW-6	4	17-37	Upper unconfined	Slug Test	NA	1.7
SW-7	4	12-32	Upper unconfined	Slug Test	NA	15

Notes: Unconfined refers to wells completed in upper portion of unconfined aquifer

Lower unconfined refers to wells completed in lower portion of unconfined aquifer

NA = Not available

**TABLE 3-7**  
**COMPARISON OF GROUNDWATER AND SURFACE WATER ELEVATIONS**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY AND YALE OIL FACILITIES**

Surface Water Sampling Location	July 2006 Surface Water Elevation (ft amsl)	July 2006 Adjacent Monitoring Well Elevation (ft amsl)	Elevation Difference (ft)	August 2006 Surface Water Elevation (ft amsl)	August 2006 Adjacent Monitoring Well Elevation (ft amsl)	Elevation Difference (ft)	October 2006 Surface Water Elevation (ft amsl)	October 2006 Adjacent Monitoring Well Elevation (ft amsl)	Elevation Difference (ft)
KRY200	2931.46	--	--	2931.57	--	--	2931.24	--	--
KRY201	2928.80	2925.90	2.90	2927.85	2925.72	2.13	2928.18	2925.40	2.78
KRY202	2924.13	2924.07	0.06	2924.05	2923.97	0.08	2923.97	2923.71	0.26
KRY203	2919.63	2918.30	1.33	2919.41	2918.15	1.26	2918.92	2917.86	1.06
KRY204	2910.66	--	--	2910.96	--	--	2910.91	--	--

Notes:

The adjacent monitoring wells for KRY201, KRY202, and KRY203 are KRY100A, KRY105A, and KRY109A, respectively.

There are no adjacent wells for surface water locations KRY200 and KRY204.

ft Feet

amsl Above mean sea level

July water levels collected on July 11-12, 2006

August water levels collected on August 1-3, 2006

October water levels collected on October 1-3, 2006

-- No Data

**TABLE 3-8**  
**SUMMARY OF LNAPL THICKNESSES**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL**  
**FACILITIES**

Well	July 2006		August 2006		October 2006	
	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)	Depth to LNAPL (ft bgs)	LNAPL Thickness (ft)
GWRR-3	--	--	--	--	11.68	0.01
GWRR-5	16.81	0.03	--	--	--	--
GWRR-7	11.56	0.45	11.74	0.02	12.15	0.39
GWRR-9	--	--	20.08	0.03	--	--
KPT-3	16.88	0.05	--	--	18.39	0.06
KRY105A	--	--	--	--	8.55	0.01
KRY114A	18.55	0.85	19.55	0.94	19.54	0.04
KRY116A	--	--	--	--	16.67	0.01
KRY118B	--	--	--	--	11.23	0.01
KRY119A	--	--	--	--	14.23	0.01
KRY122A	--	--	--	--	15.95	0.01
KRY135A	13.10	2.15	13.83	0.17	13.84	2.62
KRY136A	19.67	0.47	20.98	0.39	20.85	0.28
KRY138A	19.61	0.04	20.87	0.01	--	--

Notes:

Measurements were not collected for GWRR9 in July.

LNAPL was not detected in wells KPT-3 or GWRR-5 in August.

LNAPL Light nonaqueous phase liquid

ft Feet

bgs Below ground surface

-- No measurement collected or no measurable LNAPL thickness

July water levels were collected on July 11-12, 2006.

August water levels were collected on August 1-3, 2006.

October water levels were collected on October 1-3, 2006.

**TABLE 4-1**  
**GROUNDWATER ANALYTE STATISTICS**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY, AND YALE OIL FACILITIES**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Tap Water PRG	Number of Samples Above EPA Region 9 Tap Water PRG	
1,1,1-TRICHLOROETHANE	UG/L	118	0	0.0%				200				3.2E+03		
1,1,2-TETRACHLOROETHANE	UG/L	118	0	0.0%				2				5.5E-02		
1,1,2-TRICHLOROETHANE	UG/L	118	0	0.0%				3				2.0E-01		
1,1-DICHLOROETHANE	UG/L	118	0	0.0%								8.1E+02		
1,1-DICHLOROETHENE	UG/L	118	0	0.0%				0.6				3.4E+02		
1,2,3,4,6,7,8,9-OCDD	PG/L	28	11	39.3%	180	500000								
1,2,3,4,6,7,8,9-OCDF	PG/L	28	6	21.4%	58	19000								
1,2,3,4,6,7,8-HPCDD	PG/L	28	8	28.6%	17	60000								
1,2,3,4,6,7,8-HPCDF	PG/L	28	13	46.4%	2	6800								
1,2,3,4,7,8,9-HPCDF	PG/L	28	3	10.7%	250	450								
1,2,3,4,7,8-HX CDDL	PG/L	28	3	10.7%	12	95								
1,2,3,4,7,8-HXCDF	PG/L	28	7	25.0%	1.3	700								
1,2,3,6,7,8-HX CDDL	PG/L	28	9	32.1%	1.6	3400								
1,2,3,6,7,8-HX CDF	PG/L	28	6	21.4%	0.65	230								
1,2,3,7,8,9-HX CDDL	PG/L	28	4	14.3%	8.5	220								
1,2,3,7,8,9-HX CDF	PG/L	28	4	14.3%	28	260								
1,2,3,7,8-PECDD	PG/L	28	3	10.7%	3.5	10								
1,2,3,7,8-PECDF	PG/L	28	2	7.1%	3.2	150								
1,2,4-TRICHLOROBENZENE	UG/L	118	0	0.0%				70				7.2E+00		
1,2,4-TRIMETHYLBENZENE	UG/L	118	21	17.8%	0.23	1090	ND					1.2E+01	14	
1,2-DICHLOROETHANE	UG/L	118	1	0.8%	0.92	0.92		4				1.2E-01	1	
1,2-DICHLOROPROPANE	UG/L	118	0	0.0%				5				1.6E-01		
1,3,5-TRIMETHYLBENZENE	UG/L	118	17	14.4%	0.19	370	ND					1.2E+01	13	
1,4-DICHLOROBENZENE	UG/L	118	0	0.0%				75				5.0E-01		
1-METHYLNAPHTHALENE	UG/L	118	11	9.3%	2.4	146	ND							
2,3,4,5-TETRACHLOROPHENOL	UG/L	118	5	4.2%	2	778								
2,3,4,6,7,8-HX CDF	PG/L	28	3	10.7%	33	220								
2,3,4,6-TETRACHLOROPHENOL	UG/L	118	2	1.7%	3.9	7.9							1.1E+03	
2,3,4,7,8-PECDF	PG/L	28	5	17.9%	1	340								
2,3,4,TRICHLOROPHENOL	UG/L	118	1	0.8%	9.7	9.7								
2,3,5,6-TETRACHLOROPHENOL	UG/L	107	2	1.9%	5.3	8.5								
2,3,7,8-TCDD	PG/L	28	2	7.1%	1.8	2								
2,3,7,8-TCDD (TEQ) (WHO1998)	PG/L	28	28	100.0%	2.986	1346.05	5.58	2	28			4.5E-01	28	
2,3,7,8-TCDF	PG/L	28	3	10.7%	5.7	39								
2,4,5-TRICHLOROPHENOL	UG/L	118	3	2.5%	3.2	4.4		7				3.6E+03		
2,4,6-TRICHLOROPHENOL	UG/L	118	3	2.5%	2.6	16		30				3.6E+00	3	
2,4-DICHLOROPHENOL	UG/L	118	0	0.0%				77				1.1E+02		
2,4-DIMETHYLPHENOL	UG/L	118	1	0.8%	4.3	4.3		380				7.3E+02		
2,4-DINITROPHENOL	UG/L	118	0	0.0%				69				7.3E+01		
2,4-DINITROTOLUENE	UG/L	118	0	0.0%				0.5				7.3E+01		
2,6-DIMETHYLNAPHTHALENE	UG/L	118	12	10.2%	1.3	133	ND							
2,6-DINITROTOLUENE	UG/L	118	0	0.0%				0.5				3.6E+01		
2-BUTANONE	UG/L	118	7	5.9%	8.3	18							7.0E+03	
2-CHLORONAPHTHALENE	UG/L	118	0	0.0%				1000				4.9E+02		
2-CHLOROPHENOL	UG/L	118	0	0.0%				81				3.0E+01		
2-HEXANONE	UG/L	118	0	0.0%										
2-METHYLNAPHTHALENE	UG/L	118	5	4.2%	6.7	40							1.8E+03	
2-METHYLPHENOL	UG/L	118	0	0.0%				13				1.1E+02		
2-NITROANILINE	UG/L	118	0	0.0%									1.1E+02	
2-NITROPHENOL	UG/L	118	0	0.0%									1.5E-01	
3,3'-DICHLOROBENZIDINE	UG/L	118	0	0.0%				0.21					3.2E+00	
3-NITROANILINE	UG/L	118	0	0.0%									3.6E+00	
4,6-DINITRO-2-METHYLPHENOL	UG/L	118	0	0.0%				13						

**TABLE 4-1**  
**GROUNDWATER ANALYTE STATISTICS**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY, AND YALE OIL FACILITIES**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Tap Water PRG	Number of Samples Above EPA Region 9 Tap Water PRG
4-BROMOPHENYLPHENYLETHER	UG/L	118	0	0.0%									
4-CHLORO-3-METHYLPHENOL	UG/L	118	0	0.0%				3000					
4-CHLOROANILINE	UG/L	118	0	0.0%								1.5E+02	
4-CHLOROPHENYLPHENYLETHER	UG/L	118	0	0.0%									
4-ISOPROPYLtolUENE	UG/L	118	17	14.4%	0.11	10	ND						
4-METHYL-2-PENTANONE	UG/L	118	0	0.0%								2.0E+03	
4-NITROANILINE	UG/L	118	0	0.0%								3.2E+00	
4-NITROPHENOL	UG/L	118	0	0.0%				60					
ACENAPHTHENE	UG/L	118	8	6.8%	0.94	7.8		670		420		3.7E+02	
ACETONE	UG/L	118	7	5.9%	8.6	38						5.5E+03	
ACROLEIN	UG/L	118	0	0.0%				190				4.2E-02	
ALUMINUM	UG/L	32	0	0.0%								3.6E+04	
ANTHRACENE	UG/L	118	3	2.5%	0.57	3.1		2100		2100		1.8E+03	
ANTIMONY	UG/L	32	0	0.0%				6				1.5E+01	
ARSENIC	UG/L	32	6	18.8%	6	70	17	10	4			4.5E-02	6
BARIUM	UG/L	32	32	100.0%	1	1022	590	2000				2.6E+03	10
BENZENE	UG/L	118	7	5.9%	0.435	623	ND	5	5	5	5	3.5E-01	7
BENZO(A)ANTHRACENE	UG/L	118	0	0.0%				0.5				9.2E-02	
BENZO(A)PYRENE	UG/L	118	0	0.0%				0.05				9.2E-03	
BENZO(B)FLUORANTHENE	UG/L	118	0	0.0%				0.5				9.2E-02	
BENZO(E)PYRENE	UG/L	118	0	0.0%									
BENZO(G,H,I)PERYLENE	UG/L	118	0	0.0%									
BENZO(K)FLUORANTHENE	UG/L	118	0	0.0%				5		4.79		9.2E-01	
BENZOIC ACID	UG/L	1	0	0.0%								1.5E+05	
BENZYL ALCOHOL	UG/L	118	0	0.0%								1.1E+04	
BERYLLIUM	UG/L	32	0	0.0%				4				7.3E+01	
BIPHENYL	UG/L	118	1	0.8%	4.6	4.6						3.0E+02	
BIS(2-CHLOROETHOXY)METHANE	UG/L	118	0	0.0%									
BIS(2-CHLOROETHYL)ETHER	UG/L	118	0	0.0%				0.3				1.0E-02	
BIS(2-CHLOROPROPYL)ETHER	UG/L	118	0	0.0%								2.7E-01	
BIS(2-ETHYLHEXYL)ADIPATE	UG/L	118	0	0.0%				300				5.6E+01	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	118	5	4.2%	2.5	27		6	1			4.8E+00	2
BROMATE	UG/L	5	0	0.0%								9.6E-02	
BROMOFORM	UG/L	118	0	0.0%				80				8.5E+00	
BROMOMETHANE	UG/L	118	0	0.0%				10				8.7E+00	
BUTYL BENZYL PHTHALATE	UG/L	118	0	0.0%				1500				7.3E+03	
C11-C22 AROMATICS	UG/L	28	8	28.6%	270	2200	ND			300	7		
C19-C36 ALIPHATICS	UG/L	28	1	3.6%	550	550				1000			
C5-C8 ALIPHATICS	UG/L	118	19	16.1%	21	8550	ND			400	3		
C9-C10 AROMATICS	UG/L	118	28	23.7%	23	5360	ND			50	20		
C9-C12 ALIPHATICS	UG/L	118	30	25.4%	11	4420	ND			400	3		
C9-C18 ALIPHATICS	UG/L	28	2	7.1%	350	380				400			
CADMIUM	UG/L	32	0	0.0%					5			1.8E+01	
CARBAZOLE	UG/L	118	0	0.0%								3.4E+00	
CARBON DISULFIDE	UG/L	118	0	0.0%								1.0E+03	
CARBON TETRACHLORIDE	UG/L	118	0	0.0%					3			1.7E-01	
CHLORIDE	UG/L	6	5	83.3%	2000	5000							
CHLOROBENZENE	UG/L	118	1	0.8%	1	1		100				1.1E+02	
CHLOROETHANE	UG/L	118	0	0.0%								4.6E+00	
CHLOROFORM	UG/L	118	1	0.8%	1	1		70				1.7E-01	1
CHLOROMETHANE	UG/L	118	0	0.0%								1.6E+02	
CHROMIUM	UG/L	32	3	9.4%	3	8		100					
CHRYSENE	UG/L	118	0	0.0%					50		48	9.2E+00	

**TABLE 4-1**  
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ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Tap Water PRG	Number of Samples Above EPA Region 9 Tap Water PRG
CIS-1,2-DICHLOROETHENE	UG/L	118	0	0.0%				70				6.1E+01	
CIS-1,3-DICHLOROPROPENE	UG/L	118	0	0.0%				4				4.0E-01	
COBALT	UG/L	32	0	0.0%								7.3E+02	
COPPER	UG/L	32	2	6.3%	2	3		1300				1.5E+03	
DIBENZO(A,H)ANTHRACENE	UG/L	118	0	0.0%				0.05		0.048		9.2E-03	
DIBENZOFURAN	UG/L	118	0	0.0%								1.2E+01	
DIBROMOCHLOROMETHANE	UG/L	118	0	0.0%				4				1.3E-01	
DICHLOROBROMOMETHANE	UG/L	118	0	0.0%									
DIETHYL PHTHALATE	UG/L	118	2	1.7%	1.8	5.8		17000				2.9E+04	
DIMETHYL PHTHALATE	UG/L	118	0	0.0%				270000				3.6E+05	
DI-N-BUTYLPHTHALATE	UG/L	118	1	0.8%	13	13		2000				3.6E+03	
DI-N-OCTYLPHTHALATE	UG/L	118	0	0.0%								1.5E+03	
ETHYLBENZENE	UG/L	118	14	11.9%	0.55	1010	ND	700	2	700	2	1.3E+03	2
FLUORANTHENE	UG/L	118	0	0.0%				130		280		1.5E+03	
FLUORENE	UG/L	118	6	5.1%	0.72	19		1100		280		2.4E+02	
FORMALDEHYDE	UG/L	6	0	0.0%								5.5E+03	
HEXACHLOROBENZENE	UG/L	118	0	0.0%				0.2				4.2E-02	
HEXACHLOROBUTADIENE	UG/L	118	0	0.0%				5				8.6E-01	
HEXACHLOROCYCLOPENTADIENE	UG/L	118	0	0.0%				50				2.2E+02	
HEXACHLOROETHANE	UG/L	118	0	0.0%				30				4.8E+00	
INDENO(1,2,3-CD)PYRENE	UG/L	118	0	0.0%				0.5		0.044		9.2E-02	
IRON	UG/L	32	15	46.9%	120	18990	8240	300	11			1.1E+04	6
ISOPHORONE	UG/L	118	0	0.0%				400				7.1E+01	
ISOPROPYLBENZENE	UG/L	118	21	17.8%	0.24	42						6.6E+02	
LEAD	UG/L	32	2	6.3%	0.7	7.3		15					
M+P-CRESOLS	UG/L	118	2	1.7%	13	34							
M+P-XYLENES	UG/L	118	21	17.8%	0.48	3530	ND						
MANGANESE	UG/L	32	24	75.0%	19	12570	2930	50	21			8.8E+02	20
MERCURY	UG/L	32	0	0.0%				2				1.1E+01	
METHYL TERT-BUTYL ETHER	UG/L	118	9	7.6%	0.75	1		30		30		1.1E+01	
METHYLENE CHLORIDE	UG/L	118	1	0.8%	0.45	0.45		5				4.3E+00	
NAPHTHALENE	UG/L	118	28	23.7%	0.66	178	ND	100	2	100	2	6.2E+00	28
N-BUTYLBENZENE	UG/L	118	24	20.3%	0.24	249	ND					2.4E+02	3
NICKEL	UG/L	32	1	3.1%	20	20		100					
NITROBENZENE	UG/L	118	0	0.0%				17				3.4E+00	
N-NITROSODI-N-PROPYLAMINE	UG/L	118	0	0.0%				0.05				9.6E-03	
N-NITROSODIPHENYLAMINE	UG/L	118	0	0.0%				33				1.4E+01	
N-PROPYLBENZENE	UG/L	118	16	13.6%	0.17	93	ND					2.4E+02	2
O-XYLENE	UG/L	118	20	16.9%	0.3	945		10000					
PENTACHLOROPHENOL	UG/L	118	33	28.0%	0.036	16300	ND	1	15			5.6E-01	16
PHENANTHRENE	UG/L	118	7	5.9%	0.84	26	ND						
PHENOL	UG/L	118	2	1.7%	10	21		300				1.1E+04	
PYRENE	UG/L	118	3	2.5%	0.28	3.3		830		960		1.8E+02	
SEC-BUTYLBENZENE	UG/L	118	17	14.4%	0.31	8						2.4E+02	
SELENIUM	UG/L	32	0	0.0%				50				1.8E+02	
SILVER	UG/L	32	0	0.0%				100				1.8E+02	
STYRENE	UG/L	118	0	0.0%				100				1.6E+03	
TETRACHLOROETHENE	UG/L	118	2	1.7%	0.19	0.4		5				1.0E-01	2
TETRACHLOROPHENOL	UG/L	118	2	1.7%	5.3	8.5						3.6E-03	
TETRAETHYLLLEAD	UG/L	118	0	0.0%				2				2.4E+00	
THALLIUM	UG/L	32	0	0.0%								2.2E+04	
TIN	UG/L	32	0	0.0%									
TOLUENE	UG/L	118	15	12.7%	0.41	1070	ND	1000	1	1000	1	7.2E+02	2

**TABLE 4-1**  
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ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Tap Water PRG	Number of Samples Above EPA Region 9 Tap Water PRG
<b>TOTAL EXTRACTABLE HYDROCARBONS</b>	UG/L	28	15	53.6%	220	3500	ND						
<b>TOTAL EXTRACTABLE HYDROCARBONS - SCREEN</b>	UG/L	118	28	23.7%	340	24000	ND						
<b>TOTAL PURGEABLE HYDROCARBONS</b>	UG/L	118	31	26.3%	26	20000	ND						
TRANS-1,2-DICHLOROETHENE	UG/L	118	0	0.0%				100				1.2E+02	
TRANS-1,3-DICHLOROPROPENE	UG/L	118	0	0.0%				2					
TRICHLOROETHENE	UG/L	118	1	0.8%	0.5	0.5		5				2.8E-02	1
VANADIUM	UG/L	32	0	0.0%								3.6E+01	
VINYL ACETATE	UG/L	118	0	0.0%								4.1E+02	
VINYL CHLORIDE	UG/L	118	0	0.0%				0.2				2.0E-02	
<b>XYLENES (TOTAL)</b>	UG/L	118	26	22.0%	0.38	4480	ND	10000		10000		2.1E+02	5
ZINC	UG/L	32	4	12.5%	10	90		2000				1.1E+04	

Notes

DEQ Human Health Standard from DEQ Circular 7 (DEQ 2006)

DEQ Risk-Based Screening Level (RBSL) (DEQ 2002)

EPA Region 9 Tap Preliminary Remediation Goal (PRG) (EPA 2004)

Blank cell indicates no concentration reported, no criteria were exceeded, or no screening criteria are available

ND = Not detected

Analytes in **BOLD** are contaminants of potential concern (COPC). COPC must (1) be detected in at least 5 percent of samples, (2) exceed screening criteria or have no criteria, (3) exceed background concentration, and (4) not be essential nutrient

Analytes in **BOLD ITALICS** are pentachlorophenol breakdown products retained as COPCs for evaluation of remedial alternatives

Background concentrations included only for COPCs

Total metals analysis conducted for groundwater samples

**TABLE 4-2**  
**SURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Residential RBSL	Number of Samples Above DEQ Residential RBSL	DES Commercial RBSL	Number of Samples Above DEQ Commercial RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)
1,1,1-TRICHLOROETHANE	MG/KG	122	4	3.3%	0.031	0.041						1.2E+03		1.2E+03		1	
1,1,2,2-TETRACHLOROETHANE	MG/KG	122	4	3.3%	0.031	0.041						4.1E-01		9.3E-01		0.002	4
1,1,2-TRICHLOROETHANE	MG/KG	122	4	3.3%	0.031	0.041						7.3E-01		1.6E+00		0.009	4
1,1-DICHLOROETHANE	MG/KG	122	4	3.3%	0.031	0.041						5.1E+02		1.7E+03		10	
1,1-DICHLOROETHENE	MG/KG	122	4	3.3%	0.031	0.041						1.2E+02		4.1E+02		0.03	4
1,2,3,4,6,7,8,9-HxCDD	NG/KG	123	121	98.4%	6.6	1100000											
1,2,3,4,6,7,8,9-OCDF	NG/KG	123	114	92.7%	2.4	210000											
1,2,3,4,6,7,8-HxCDD	NG/KG	117	116	99.1%	0.95	325000											
1,2,3,4,6,7,8-HxCDF	NG/KG	115	110	95.7%	0.24	105000											
1,2,3,4,7,8,9-HxCDF	NG/KG	117	85	72.6%	0.079	51700											
1,2,3,4,7,8-HxCDD	NG/KG	116	87	75.0%	0.13	1940											
1,2,3,4,7,8-HxCDF	NG/KG	117	86	73.5%	0.11	98900											
1,2,3,6,7,8-HxCDD	NG/KG	115	102	88.7%	0.14	832000											
1,2,3,6,7,8-HxCDF	NG/KG	115	69	60.0%	0.041	34700											
1,2,3,7,8,9-HxCDD	NG/KG	115	95	82.6%	0.2	56300											
1,2,3,7,8,9-HxCDF	NG/KG	114	78	68.4%	0.053	70900											
1,2,3,7,8-PECDF	NG/KG	116	81	69.8%	0.059	1790											
1,2,3,7,8-PECDF	NG/KG	117	67	57.3%	0.046	4960											
1,2,4-TRICHLOROBENZENE	MG/KG	123		0.0%								6.2E+01		2.2E+02		3	
1,2,4-TRIMETHYLBENZENE	MG/KG	115	3	1.7%	0.08	0.384						5.2E+01		1.7E+02			
1,2-DICHLOROBENZENE	MG/KG	8		0.0%								6.0E+02		6.0E+02		9	
1,2-DICHLOROETHANE	MG/KG	122	4	3.3%	0.031	0.041						2.8E-01		6.0E+01		0.01	4
1,2-DICHLOROETHENE	MG/KG	6	4	66.7%	0.031	0.041	ND										
1,2-DICHLOROPROpane	MG/KG	123	4	3.3%	0.031	0.041						3.4E-01		7.4E-01		0.01	4
1,3,5-TRIMETHYLBENZENE	MG/KG	115	1	0.9%	0.1	0.3						2.1E+01		7.0E+01			
1,3-DICHLOROBENZENE	MG/KG	8		0.0%								5.3E+02		6.0E+02			
1,4-DICHLOROBENZENE	MG/KG	123		0.0%								3.4E+00		7.9E+00		1	
1-METHYLNAPHTHALENE	MG/KG	117	3	1.7%	0.039	0.085											
2,3,4,5-TETRACHLOROPHENOL	MG/KG	126	7	5.6%	0.0036	1.2	ND										
2,3,4,6,7,8-HxCDF	NG/KG	114	77	67.5%	0.071	670											
2,3,4,6-TETRACHLOROPHENOL	MG/KG	115	7	6.1%	0.039	1.4						1.8E+03		1.8E+04			
2,3,4,7,8-PECDF	NG/KG	115	85	73.9%	0.051	53300											
2,3,4-TRICHLOROPHENOL	MG/KG	126		0.0%													
2,3,5,6-TETRACHLOROPHENOL	MG/KG	107	1	0.9%	0.53	0.53											
2,3,6-TETRACHLOROPHENOL	MG/KG	10		0.0%													
2,3,7,8-TCDD	NG/KG	115	48	41.7%	0.053	13											
2,3,7,8-TCDD (TEQ) (WHO2005)	NG/KG	117	117	100.0%	0.098635	171510.143	4.74					3.9E+00	83	1.6E+01	60		
2,3,7,8-TCDF	NG/KG	117	77	65.8%	0.056	9230											
2,4,5-TRICHLOROPHENOL	MG/KG	135	2	1.5%	0.015	0.018						6.1E+03		6.2E+04		140	
2,4,6-TRICHLOROPHENOL	MG/KG	135		0.0%								6.1E+00		6.2E+01		0.08	
2,4-DICHLOROPHENOL	MG/KG	124		0.0%								1.8E+02		1.8E+03		0.5	
2,4-DIMETHYLPHENOL	MG/KG	124		0.0%								1.2E+03		1.2E+04		4	
2,4-DINITROPHENOL	MG/KG	124		0.0%								1.2E+02		1.2E+03		0.1	
2,4-DINITROTOLUENE	MG/KG	123		0.0%								1.2E+02		1.2E+03		0.0004	
2,6-DIMETHYLNAPHTHALENE	MG/KG	117	3	2.6%	0.068	5											
2,6-DINITROTOLUENE	MG/KG	123		0.0%								6.1E+01		6.2E+01		0.0003	
2-BUTANONE	MG/KG	122	4	3.3%	0.063	0.083						2.2E+04		1.1E+05			
2-CHLORONAPHTHALENE	MG/KG	123		0.0%								4.9E+03		2.3E+04			
2-CHLOROPHENOL	MG/KG	124		0.0%								6.3E+01		2.4E+02		2	
2-HEXANONE	MG/KG	123	4	3.3%	0.063	0.081											
2-METHYLNAPHTHALENE	MG/KG	138	3	2.2%	0.052	38						3.1E+03		3.1E+04		8	
2-METHYLPHENOL	MG/KG	124		0.0%													
2-NITROANILINE	MG/KG	123		0.0%								1.8E+02		1.8E+03			
2-NITROPHENOL	MG/KG	124		0.0%													
3,3'-DICHLOROBENZIDINE	MG/KG	123		0.0%								1.1E+00		3.8E+00		0.003	
3-NITROANILINE	MG/KG	122		0.0%								1.8E+01		8.2E+01			
4,6-DINITRO-2-METHYLPHENOL	MG/KG	124		0.0%								6.1E+00		6.2E+01			
4-BROMOPHENYLPHENYLETHER	MG/KG	123		0.0%													
4-CHLORO-3-METHYLPHENOL	MG/KG	124		0.0%													
4-CHLOROANILINE	MG/KG	123		0.0%								2.4E+02		2.5E+03		0.3	
4-CHLOROPHENOL	MG/KG	121		0.0%													
4-CHLOROPHENYLPHENYLETHER	MG/KG	123		0.0%													
4-ISOPROPYLtolUENE	MG/KG	115	3	2.6%	0.12	0.27											
4-METHYL-2-PENTANONE	MG/KG	123	4	3.3%	0.063	0.083						5.3E+03		4.7E+04			
4-METHYLPHENOL	MG/KG	8		0.0%								3.1E+02		3.1E+03			
4-METHYLPHENOL/3-METHYLPHENOL	MG/KG	1		0.0%													
4-NITROANILINE	MG/KG	123		0.0%								2.3E+01		8.2E+01			
4-NITROPHENOL	MG/KG	124		0.0%													
ACENAPHTHENE	MG/KG	226	7	3.1%	0.0317	103		500	500			3.7E+03		2.9E+04		290	
ACENAPHTHYLENE	MG/KG	109	8	7.3%	1.6	360	ND										
ACETONE	MG/KG	123	4	3.3%	0.063	0.083						1.4E+04		5.4E+04		8	
ACROLEIN	MG/KG	115		0.0%								1.0E+01		3.4E+01			
ALUMINUM	MG/KG	42	42	100.0%	2950	13100	11900					7.6E+04	25	1.0E+05	9		
ANTHRACENE	MG/KG	227	24	10.6%	0.00328	620		3000	10000			2.2E+04		1.0E+05		5900	
ANTIMONY	MG/KG	32	4	3.1%	0.7	0.7						3.1E+01		4.1E+02		3	
AROCLOR-1254	MG/KG	2		0.0%													

**TABLE 4-2**  
**SURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Residential RBSL	Number of Samples Above DEQ Residential RBSL	DES Commercial RBSL	Number of Samples Above DEQ Commercial RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)
ARSENIC	MG/KG	43	42	97.7%	1.48	240.7	3.94	40	1	40	1	3.9E-01	42	1.6E+00	41	10	6
BARIUM	MG/KG	42	42	100.0%	33.3	259						5.4E+03		6.7E+04		820	
BENZENE	MG/KG	175	10	5.7%	0.00076	0.056	ND	0.1		0.1		6.4E+01		1.4E+00		0.02	6
BENZO(A)ANTHRACENE	MG/KG	224	44	19.6%	0.0101	50	0.0335	0.8	9	6	3	6.2E-01	9	2.1E+00	5	0.8	9
BENZO(A)PYRENE	MG/KG	226	41	18.1%	0.00904	26	0.0048	0.08	19	0.6	7	6.2E-02	23	2.1E-01	10	4	2
BENZO(B)FLUORANTHENE	MG/KG	214	43	20.1%	0.0134	4.2	NA	0.8	2	6		6.2E-01	3	2.1E+00	1	2	1
BENZO(K)FLUORANTHENE	MG/KG	12	2	16.7%	22	36	0.0954										
BENZOLEPYRENE	MG/KG	117	20	17.1%	0.039	2.2	0.048										
BENZO(G,H,I)PYRENE	MG/KG	225	20	8.9%	0.035	3.9	ND										
BENZO(K)FLUORANTHENE	MG/KG	214	38	17.8%	0.00572	1.28		8		60		6.2E+00		2.1E+01		20	
BENZOIC ACID	MG/KG	122	1	0.8%	0.91	0.91						1.0E+05		1.0E+05		200	
BENZYL ALCOHOL	MG/KG	123		0.0%								1.8E+04		1.0E+05			
BERYLLIUM	MG/KG	45	12	26.7%	0.2	0.89						1.5E+02		1.9E+03		30	
BIPHENYL	MG/KG	117	1	0.9%	0.036	0.036						3.0E+03		2.3E+04			
BIS(2-CHLOROETHoxy)METHANE	MG/KG	123		0.0%													
BIS(2-CHLOROETHYL)ETHER	MG/KG	123		0.0%								2.2E+01		5.8E-01		0.0002	
BIS(2-CHLOROISOPROPYL)ETHER	MG/KG	123		0.0%								2.9E+00		7.4E+00			
BIS(2-ETHYLHEXYL)ADIPATE	MG/KG	115		0.0%								4.1E+02		1.4E+03			
BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	123	20	16.3%	0.044	9.1						3.5E+01		1.2E+02			
BROMOFORM	MG/KG	123	4	3.3%	0.031	0.041						6.2E+01		2.2E+02		0.4	
BROMOMETHANE	MG/KG	123	4	3.3%	0.063	0.081						3.9E+00		1.3E+01		0.1	
BUTYL BENZYL PHTHALATE	MG/KG	123	2	1.6%	0.059	2.2						1.2E+04		1.0E+05		8100	
C10-C22 ALIPHATICS	MG/KG	8	8	100.0%	17	5336	ND										
C10-C22 AROMATICS	MG/KG	4	4	100.0%	26.8	31600	ND										
C11-C22 AROMATICS	MG/KG	114	88	72.2%	7.8	14100	11	70	26	300	12						
C19-C36 ALIPHATICS	MG/KG	126	111	88.1%	7.7	19300	ND	2500	9	5000	7						
C5-C8 ALIPHATICS	MG/KG	150	9	6.0%	1.1	8.7		19		50							
C5-C8 ALIPHATICS ADJUSTED	MG/KG	15		0.0%													
C9-C10 AROMATICS	MG/KG	150	7	4.7%	4.7	235		10	5	30	2						
C9-C12 ALIPHATICS	MG/KG	150	12	8.0%	1.9	573	ND	70	2	300	1						
C9-C12 ALIPHATICS ADJUSTED	MG/KG	15	3	20.0%	37.8	338											
C9-C18 ALIPHATICS	MG/KG	126	33	26.2%	8.3	12200	ND	100	13	600	9						
CADMIUM	MG/KG	45	7	15.6%	2.2	3.4						3.7E+01		4.5E+02		4	
CALCIUM	MG/KG	9	9	100.0%	2920	54800											
CARBAZOLE	MG/KG	193	6	3.1%	0.041	41						2.4E+01	2	8.6E+01		0.3	2
CARBON DISULFIDE	MG/KG	123	5	4.1%	0.001	0.041						3.6E+02		7.2E+02		20	
CARBON TETRACHLORIDE	MG/KG	122	4	3.3%	0.031	0.041						2.5E+01		5.5E+01		0.03	4
CHLOROBENZENE	MG/KG	123	4	3.3%	0.031	0.041						1.5E+02		5.3E+02		0.7	
CHLOROETHANE	MG/KG	122	4	3.3%	0.063	0.081						3.0E+00		6.5E+00			
CHLOROFORM	MG/KG	122	4	3.3%	0.031	0.041						2.2E+01		4.7E+01		0.3	
CHLORMETHANE	MG/KG	122	4	3.3%	0.063	0.081						4.7E+01		1.6E+02			
CHROMIUM	MG/KG	45	44	97.8%	6.1	27.8	8.2					2.1E+02		4.5E+02		20	1
CHRYSENE	MG/KG	226	42	18.6%	0.016	98	0.0479	80	1	600		6.2E+01	1	2.1E+02	80	1	
CIS-1,2-DICHLOROETHENE	MG/KG	115		0.0%								4.3E+01		1.5E+02		0.2	
CIS-1,3-DICHLOROPROPENE	MG/KG	122	4	3.3%	0.031	0.041						7.8E+01		1.8E+00		0.002	4
COBALT	MG/KG	42	11	26.2%	3	8						9.0E+02		1.9E+03			
COPPER	MG/KG	45	45	100.0%	5.1	98						3.1E+03		4.1E+04			
DIBENZO(A,ANTHRACENE	MG/KG	217	18	8.3%	0.0176	1.02	ND	0.08	6	0.6	1	6.2E-02	10	2.1E-01	4	0.8	1
DIBENZOFURAN	MG/KG	123		0.0%								1.3E+02		1.6E+03			
DIBROMOCHLOROMETHANE	MG/KG	122	4	3.3%	0.031	0.041						1.1E+00		2.6E+00		0.2	
DICHLOROBROMOMETHANE	MG/KG	122	4	3.3%	0.031	0.041											
DIESEL	MG/KG	9	1	11.1%	965	965	NA										
DIESEL RANGE ORGANICS	MG/KG	14	13	92.9%	20	28873	NA										
DIESEL RANGE ORGANICS AS DIESEL	MG/KG	4	1	25.0%	28873	28873	NA										
DIETHYL PHTHALATE	MG/KG	124	1	0.8%	0.21	0.21						4.9E+04		1.0E+05			
DIMETHYL PHTHALATE	MG/KG	123		0.0%								1.0E+05		1.0E+05			
DI-N-BUTYLPHthalate	MG/KG	123	5	4.1%	0.048	0.62						6.1E+03		6.2E+04		2700	
DI-N-OCTYLPHthalate	MG/KG	124		0.0%								2.4E+03		2.5E+04		100000	
ENDRIN	MG/KG	1		0.0%								1.8E+01		1.8E+02		0.5	
EPH SCREEN	MG/KG	41	3	75.0%	14	230											
ETHYLBENZENE	MG/KG	174	11	6.3%	0.0038	0.28		40		40		4.0E+02		4.0E+02		7	
FLUORANTHENE	MG/KG	226	26	11.5%	0.048	73	400		4000			2.3E+03		2.2E+04		2100	
FLUORENE	MG/KG	227	20	8.8%	0.0219	57	400		600			2.7E+03		2.6E+04		280	
GASOLINE RANGE ORGANICS	MG/KG	3	2	66.7%	1100	1200	NA										
HEXACHLOROBENZENE	MG/KG	123	1	0.8%	0.12	0.12						3.0E-01		1.1E+00		1	
HEXACHLOROBUTADIENE	MG/KG	123		0.0%								6.2E+00		2.2E+01		1	
HEXACHLOROCYCLOPENTADIENE	MG/KG	123		0.0%								3.7E+02		3.7E+03		200	
HEXACHLOROETHANE	MG/KG	123		0.0%								3.5E+01		1.2E+02		0.2	
INDENO[1,2,3-CD]PYRENE	MG/KG	223	16	7.2%	0.072	5	0.14	0.8	3	6		6.2E-01	3	2.1E+00	1	7	
IRON	MG/KG	42	42	100.0%	4930	25500	13000					2.3E+04	42	1.0E-05	37		
ESOPHORONE	MG/KG	123		0.0%								5.1E+02		5.1E+02		0.3	
ISOPROPYLBENZENE	MG/KG	115	1	0.9%	0.081	0.081						5.7E+02		2.0E+03			
LEAD	MG/KG	122	119	97.5%	7	44300	15.3					4.0E+02	57	8.0E+02	45		
LUBE OIL AND RELATED PRODUCTS	MG/KG	1		0.0%													
M+p-CRESOLS	MG/KG	115		0.0%													
M+p-XYLENES	MG/KG	134	12	9.0%	0.056	0.64	ND										

**TABLE 4-2**  
**SURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Residential RBSL	Number of Samples Above DEQ Residential RBSL	DES Commercial RBSL	Number of Samples Above DEQ Commercial RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)
MAGNESIUM	MG/KG	9	9	100.0%	5790	17100											
MANGANESE	MG/KG	42	42	100.0%	89.2	506	342					1.8E+03	39	1.9E+04			
MERCURY	MG/KG	44	5	11.4%	0.11	0.38						2.3E+01		3.1E+02			
METHYL TERT-BUTYL ETHER	MG/KG	151	1	0.7%	0.11	0.11		0.2		0.2		3.2E+01		7.0E+01			
METHYLENE CHLORIDE	MG/KG	123	7	5.7%	0.006	7.14	ND					9.1E+00		2.1E+01		0.01	6
NAPHTHALENE	MG/KG	253	13	5.1%	0.055	16	ND	30		30		5.6E+01	1	1.9E+02		40	
N-BUTYLBENZENE	MG/KG	115	2	1.7%	0.095	0.483						2.4E+02		2.4E+02			
NICKEL	MG/KG	45	43	95.6%	7.1	33	8.9										
NITROBENZENE	MG/KG	123		0.0%								2.0E+01		1.0E+02		0.07	
N-NITROSODI-N-PROPYLAMINE	MG/KG	123		0.0%								6.9E+02		2.5E+01		0.00002	
N-NITROSODIPHENYLAMINE	MG/KG	124		0.0%								9.9E+01		3.5E+02		0.6	
N-PROPYLBENZENE	MG/KG	115	1	0.9%	0.11	0.11						2.4E+02		2.4E+02			
O-XYLENE	MG/KG	136	6	4.4%	0.11	0.4											
PENTACHLOROPHENOL	MG/KG	347	261	75.2%	0.0016	6900	ND					3.0E+00	70	9.0E+00	41	0.01	219
PHENANTHRENE	MG/KG	227	36	15.9%	0.0167	151	0.0301										
PHENOL	MG/KG	124		0.0%								1.8E+04		1.0E+05		50	
POTASSIUM	MG/KG	9	9	100.0%	429	2530											
PYRENE	MG/KG	226	58	25.7%	0.0127	47		300	6000			2.3E+03		2.9E+04		2100	
SEC-BUTYLBENZENE	MG/KG	115	1	0.9%	0.068	0.068						2.2E+02		2.2E+02			
SELENIUM	MG/KG	43		0.0%								3.9E+02		5.1E+03		3	
SILVER	MG/KG	45	1	2.2%	0.2	0.2						3.9E+02		5.1E+03		20	
SODIUM	MG/KG	9	1	11.1%	1180	1180											
STYRENE	MG/KG	122	4	3.3%	0.031	0.041						1.7E+03		1.7E+03		2	
TETRACHLOROETHENE	MG/KG	123	4	3.3%	0.031	0.041						4.8E+01		1.3E+00		0.03	4
TETRACHLOROPHENOL	MG/KG	126	7	5.6%	0.0076	0.53	ND										
TETRAETHYLLEAD	MG/KG	110		0.0%								6.1E-03		6.2E-02			
THALLIUM	MG/KG	44	6	13.6%	0.4	1.3	ND					5.2E+00	3	6.7E+01		6	
TIN	MG/KG	42	4	9.5%	6.1	20.2			40	40		4.7E+04		1.0E+05			
TOLUENE	MG/KG	175	16	9.1%	0.0035	0.5						5.2E+02		5.2E+02			
TOTAL EPH	MG/KG	20	20	100.0%	7	41900	136										
TOTAL EXTRACTABLE HYDROCARBONS	MG/KG	135	120	88.9%	7.8	44000	136										
TOTAL EXTRACTABLE HYDROCARBONS - SCREEN	MG/KG	120	115	95.8%	4.6	59200	136										
TOTAL PETROLEUM HYDROCARBONS	MG/KG	13	12	92.3%	51	33000	NA										
TOTAL PURGEABLE HYDROCARBONS	MG/KG	122	30	24.6%	1.8	59	ND										
TRANS-1,2-DICHLOROETHENE	MG/KG	116		0.0%								6.9E+01		2.3E+02		0.3	
TRANS-1,3-DICHLOROPROPENE	MG/KG	122	4	3.3%	0.031	0.041						7.8E+01		1.8E+00		0.002	4
TRICHLOROETHENE	MG/KG	122	4	3.3%	0.031	0.041						5.3E-02		1.1E-01		0.03	4
TVPH	MG/KG	15	3	20.0%	58.6	578	NA										
VANADIUM	MG/KG	42	39	92.9%	5	35.5	10.9					7.8E+01	17	1.0E+03		3000	
VINYL ACETATE	MG/KG	121	4	3.3%	0.063	0.081						4.3E+02		1.4E+03		80	
VINYL CHLORIDE	MG/KG	122	4	3.3%	0.063	0.081						7.9E+02	1	7.5E+01		0.007	4
XYLENE	MG/KG	6	4	66.7%	0.031	0.041											
XYLENES (TOTAL)	MG/KG	169	15	8.9%	0.0091	3		20	80			2.7E+02		4.2E+02		100	
ZINC	MG/KG	45	45	100.0%	19.1	803						2.3E+04		1.0E+05		6200	

Notes  
DEQ Risk-Based Screening Level (RBSL) (DEQ 2002)  
EPA Region 9 soil preliminary remediation goals (PRG) (EPA 2004)  
EPA Region 9 soil screening level (SSL) dilution attenuation factor (DAF) (EPA 2004)  
Blank cell indicates no concentration reported, no criteria were exceeded, or no screening criteria are available

**TABLE 4-3**  
**SUBSURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)	DEQ RBSL Ceiling Limit	Number of Samples Above DEQ RBSL Ceiling Limit
1,1,1,2-TETRACHLOROETHANE	MG/KG	2		0.0%							3.2E+00						
1,1,1-TRICHLOROETHANE	MG/KG	115	2	1.7%	0.047	96				1.2E+03		1.2E+03		1			
1,1,2,2-TETRACHLOROETHANE	MG/KG	115		0.0%						4.1E+01		9.3E+01		0.002			
1,1,2-TRICHLOROETHANE	MG/KG	115		0.0%						7.3E+01		1.6E+00		0.009			
1,1-DICHLOROETHANE	MG/KG	115		0.0%						5.1E+02		1.7E+03		10			
1,1-DICHLOROETHENE	MG/KG	115		0.0%						1.2E+02		4.1E+02		0.03			
1,1-DICHLOROPROPENE	MG/KG	2		0.0%													
1,2,3,4,6,7,8,9-OCD	NG/KG	63	57	90.5%	3.7	3840000											
1,2,3,4,6,7,8,9-OCDF	NG/KG	63	49	77.8%	0.32	460000											
1,2,3,4,6,7,8-HPCDD	NG/KG	63	55	87.3%	0.32	1110000											
1,2,3,4,6,7,8-HPCDF	NG/KG	62	42	67.7%	1.02	84000											
1,2,3,4,7,8,9-HPCDF	NG/KG	62	32	51.6%	0.094	6400											
1,2,3,4,7,8-HXCDD	NG/KG	62	25	40.3%	0.36	1300											
1,2,3,4,7,8-HXCF	NG/KG	62	32	51.6%	0.3	7200											
1,2,3,6,7,8-HXCDD	NG/KG	63	42	66.7%	1.13	45300											
1,2,3,6,7,8-HXCF	NG/KG	62	23	37.1%	0.3	1100											
1,2,3,7,8,9-HXCDD	NG/KG	62	32	51.6%	0.39	33100											
1,2,3,7,8,9-HXCF	NG/KG	62	28	45.2%	0.15	1200											
1,2,3,7,8-PeCDD	NG/KG	63	25	39.7%	0.15	340											
1,2,3,7,8-PeCDF	NG/KG	62	21	33.9%	0.13	3400											
1,2,3-TRICHLOROPROpane	MG/KG	2		0.0%						3.4E+02		7.6E+02					
1,2,4-TRICHLOROBENZENE	MG/KG	138		0.0%						6.2E+01		2.2E+02		3			
1,2,4-TRIMETHYLBENZENE	MG/KG	105	15	14.3%	0.18	9.98	ND		5.2E+01		2	1.7E+02					
1,2-DIBROMOETHANE	MG/KG	2		0.0%						3.2E+02		7.3E+02					
1,2-DIBROMOBENZENE	MG/KG	2		0.0%													
1,2-DICHLOROBENZENE	MG/KG	35		0.0%						6.0E+02		6.0E+02		9			
1,2-DICHLOROETHANE	MG/KG	115		0.0%						2.8E+01		6.0E+01		0.01			
1,2-DICHLOROETHENE (TOTAL)	MG/KG	11		0.0%													
1,2-DICHLOROPROPANE	MG/KG	115		0.0%						3.4E+01		7.4E+01		0.01			
1,2-DIPHENYLHYDRAZINE	MG/KG	10		0.0%						6.1E+01		2.2E+00					
1,3,5-TRIMETHYLBENZENE	MG/KG	105	14	13.3%	0.12	3.15	ND		2.1E+01		2	7.0E+01					
1,3-DICHLOROBENZENE	MG/KG	35		0.0%							5.3E+02		6.0E+02				
1,3-DICHLOROPROPANE	MG/KG	2		0.0%							1.0E+02		3.6E+02				
1,4-DICHLOROBENZENE	MG/KG	140		0.0%							3.4E+00		7.9E+00		1		
1-METHYLNAPHTHALENE	MG/KG	116	24	20.7%	0.082	191	ND										
2,2-DICHLOROPROPANE	MG/KG	2		0.0%													
2,3,4,5-TETRACHLOROPHENOL	NG/KG	113	1	0.9%	0.0076	0.0076											
2,3,4,6,7,8-HXCDF	NG/KG	60	26	43.3%	0.073	1000											
2,3,4,6-TETRACHLOROPHENOL	MG/KG	105	8	7.6%	0.068	7.3			1.8E+03		1.8E+04						
2,3,4,7,8-PeCDF	NG/KG	63	31	49.2%	0.12	4500											
2,3,4-TRICHLOROPHENOL	MG/KG	113		0.0%													
2,3,5,6-TETRACHLOROPHENOL	MG/KG	97		0.0%													
2,3,6-TRICHLOROPHENOL	MG/KG	8		0.0%													
2,3,7,8-TCDD (TEQ) (WHO2005)	NG/KG	61	8	13.1%	0.064	19											
2,3,7,8-TCDF	NG/KG	63	63	100.0%	0.24911	20652	4.7		3.9E+00		29	1.6E+01		18			
2,4,5-TRICHLOROPHENOL	MG/KG	113	1	0.9%	0.0076	0.0076											
2,4,6,7,8-HXCDF	NG/KG	60	26	43.3%	0.073	1000											
2,4,6-TETRACHLOROPHENOL	MG/KG	105	8	7.6%	0.068	7.3											
2,4,7,8-PeCDF	NG/KG	63	31	49.2%	0.12	4500											
2,4-DIMETHYLPHENOL	MG/KG	125		0.0%							1.2E+02		1.2E+04		4		
2,4-DINITROPHENOL	MG/KG	125		0.0%							1.2E+02		1.2E+03		0.1		
2,4-DINITROTOLUENE	MG/KG	138		0.0%							1.2E+02		1.2E+03		0.0004		
2,6-DIMETHYLNAPHTHALENE	MG/KG	110	28	25.5%	0.062	319	ND										
2,6-DINITROTOLUENE	MG/KG	138		0.0%							6.1E+01		6.2E+02		0.0003		
2-BUTANONE	MG/KG	117	1	0.9%	10.33	10.33					2.2E+04		1.1E+05				
2-CHLOROETHYL VINYL ETHER	MG/KG	8		0.0%													
2-CHLORONAPHTHALENE	MG/KG	138		0.0%							4.9E+03		2.3E+04				
2-CHLOROPHENOL	MG/KG	125		0.0%							6.3E+01		2.4E+02		2		
2-CHLOROTOLUENE	MG/KG	2		0.0%							1.6E+02		5.6E+02				
2-HEXANONE	MG/KG	116	1	0.9%	0.97	0.97											
2-METHYLNAPHTHALENE	MG/KG	181	47	26.0%	0.05	1000	ND				3.1E+03		3.1E+04		8		
2-METHYLPHENOL	MG/KG	125		0.0%							1.8E+02		1.8E+03				
2-NITROANILINE	MG/KG	122	2	1.6%	5.4	35											
2-NITROPHENOL	MG/KG	125		0.0%													
3,3-DICHLOROBENZIDINE	MG/KG	138		0.0%							1.1E+00		3.8E+00		0.003		
3-NITROANILINE	MG/KG	121		0.0%							1.8E+01		8.2E+01				
4,4-DDD	MG/KG	6		0.0%							2.4E+00		1.0E+01		8		
4,4-DDE	MG/KG	6		0.0%							1.7E+00		7.0E+00		30		
4,4-DDT	MG/KG	6		0.0%							1.7E+00		7.0E+00		20		
4,6-DINITRO-2-METHYLPHENOL	MG/KG	125		0.0%							6.1E+00		6.2E+01				
4-BROMOPHENYLPHENYLETHER	MG/KG	138		0.0%													
4-CHLORO-3-METHYLPHENOL	MG/KG	125		0.0%													
4-CHLOROANILINE	MG/KG	122		0.0%							2.4E+02		2.5E+03		0.3		
4-CHLOROPHENYLPHENYLETHER	MG/KG	128		0.0%													
4-CHLOROTOLUENE	MG/KG	2		0.0%													
4-ISOPROPYL TOLUENE	MG/KG	105	14	13.3%	0.091	1.36	ND				5.3E+03		4.7E+04				
4-METHYL-2-PENTANONE	MG/KG	113		0.0%													

**TABLE 4-3**  
**SUBSURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)	DEQ RBSL Ceiling Limit	Number of Samples Above DEQ RBSL Ceiling Limit
4-METHYLPHENOL	MG/KG	17		0.0%						3.1E+02		3.1E+03					
4-METHYLPHENOL/3-METHYLPHENOL	MG/KG	3		0.0%						2.3E+01		8.2E+01					
4-NITROANILINE	MG/KG	122		0.0%													
4-NITROPHENOL	MG/KG	125		0.0%													
ACENAPHTHENE	MG/KG	250	50	20.0%	0.0463	1400	ND	500	2	3.7E+03	2	2.9E+04		290	3		
ACENAPHTHYLENE	MG/KG	141	30	21.3%	0.25	390	ND										
ACETONE	MG/KG	116		0.0%						1.4E+04		5.4E+04		8			
ACROLEIN	MG/KG	105		0.0%						1.0E+01		3.4E+01					
ALDRIN	MG/KG	6		0.0%						2.9E+02		1.0E+01		0.2			
ALPHA-BHC	MG/KG	6		0.0%						9.0E-02		3.6E-01		0.0003			
ALUMINUM	MG/KG	89	88	98.9%	4300	17900	11900			7.6E+04	53	1.0E+05	11				
ANTHRAZENE	MG/KG	252	48	19.0%	0.0219	480		10000		2.2E+04		1.0E+05		5900			
ANTIMONY	MG/KG	68	1	1.5%	6.2	6.2				3.1E+01	1	4.1E+02		3	1		
AROCLOR-1016	MG/KG	6		0.0%													
AROCLOR-1221	MG/KG	6		0.0%													
AROCLOR-1232	MG/KG	6		0.0%													
AROCLOR-1242	MG/KG	6		0.0%													
AROCLOR-1248	MG/KG	6		0.0%													
AROCLOR-1254	MG/KG	6		0.0%													
AROCLOR-1260	MG/KG	6		0.0%													
ARSENIC	MG/KG	88	84	95.5%	1.06	58.4	3.94			3.9E-01	84	1.6E+00	83	10	9		
AZOBENZENE	MG/KG	6		0.0%						4.4E+00		1.6E+01					
BARIUM	MG/KG	89	89	100.0%	29	314	154			5.4E+03		6.7E+04		820			
BENZENE	MG/KG	251	10	4.0%	0.00012	12		0.1	5	6.4E+01	2	1.4E+00	2	0.02	7		
BENZIDINE	MG/KG	16		0.0%						2.1E+03		7.5E+03					
BENZO(a)ANTHRACENE	MG/KG	237	50	21.1%	0.017	140	0.0335	40	4	6.2E+01	25	2.1E+00	17	0.8	25		
BENZO(a)PYRENE	MG/KG	250	28	11.2%	0.0123	8	0.0482	10		6.2E+02	21	2.1E+01	12	4	4		
BENZO(b)FLUORANTHENE	MG/KG	197	28	14.2%	0.0185	5.47	0.0954	200		6.2E+01	5	2.1E+00	1	2	2		
BENZO(b,k)FLUORANTHENE	MG/KG	53	1	1.9%	5.4	5.4											
BENZO(e)PYRENE	MG/KG	110	5	4.5%	0.038	2.5											
BENZO(g,h,i)PERYLENE	MG/KG	250	9	3.6%	0.055	1.7											
BENZO(k,l)FLUORANTHENE	MG/KG	197	19	9.6%	0.00636	10	0.0512	2000		6.2E+00	1	2.1E+01		20			
BENZOIC ACID	MG/KG	122		0.0%						1.0E+05		1.0E+05		200			
BENZYL ALCOHOL	MG/KG	122		0.0%						1.8E+04		1.0E+05					
BERYLLIUM	MG/KG	89	10	11.2%	0.2	0.8				1.5E+02		1.9E+03		30			
BETA-BHC	MG/KG	6		0.0%						3.2E+01		1.3E+00		0.001			
BIPHENYL	MG/KG	110	2	1.8%	3.4	14				3.0E+03		2.3E+04					
BIS(2-CHLOROETHoxy)METHANE	MG/KG	138		0.0%													
BIS(2-CHLOROETHYL)ETHER	MG/KG	138		0.0%						2.2E+01		5.8E+01		0.0002			
BIS(2-CHLORoisOPROPYL)ETHER	MG/KG	138		0.0%						2.9E+00		7.4E+00					
BIS(2-ETHYLHEXYL)ADIPATE	MG/KG	105	1	1.0%	0.028	0.028				4.1E+02		1.4E+03					
BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	138	45	32.6%	0.044	2				3.5E+01		1.2E+02					
BROMOBENZENE	MG/KG	2		0.0%						2.8E+01		9.2E+01					
BROMOCHLOROMETHANE	MG/KG	2		0.0%													
BROMOFORM	MG/KG	115		0.0%						6.2E+01		2.2E+02		0.4			
BROMOMETHANE	MG/KG	115		0.0%						3.9E+00		1.3E+01		0.1			
BUTYL BENZYL PHTHALATE	MG/KG	138		0.0%						1.2E+04		1.0E+05		8100			
C10-C22 ALIPHATICS	MG/KG	41	41	100.0%	3	23386	NA										
C10-C22 AROMATICS	MG/KG	25	23	92.0%	8.22	20000	NA										
C11-C22 AROMATICS	MG/KG	108	81	75.0%	11	5450	ND	400	34								
C19-C36 ALIPHATICS	MG/KG	174	145	83.3%	4	402000	ND	5000	16								
C5-C8 ALIPHATICS	MG/KG	187	44	23.5%	1.5	1110	ND	100	8								
C5-C8 ALIPHATICS ADJUSTED	MG/KG	31	10	32.3%	2.93	307	ND										
C9-C10 AROMATICS	MG/KG	187	72	38.5%	2.6	1040	ND	30	47								
C9-C12 ALIPHATICS	MG/KG	187	74	39.6%	0.74	3960	ND	500	17								
C9-C12 ALIPHATICS ADJUSTED	MG/KG	31	17	54.8%	8.05	906	ND										
C9-C18 ALIPHATICS	MG/KG	174	137	78.7%	3	163000	ND	1000	60								
CADMIUM	MG/KG	93	2	2.2%	2	3				3.7E+01		4.5E+02		4			
CALCIUM	MG/KG	10	10	100.0%	1583	52000											
CARBAZOLE	MG/KG	155	16	10.3%	1.7	550	0.057			2.4E+01	11	8.6E+01	4	0.3	16		
CARBON DISULFIDE	MG/KG	116	1	0.9%	0.072	0.072				3.6E+02		7.2E+02		20			
CARBON TETRACHLORIDE	MG/KG	115		0.0%						2.5E+01		5.5E+01		0.03			
CHLORDANE	MG/KG	6		0.0%						3.2E+01		1.3E+00		0.001			
CHLOROBENZENE	MG/KG	115		0.0%						1.5E+02		5.3E+02		0.7			
CHLOROETHANE	MG/KG	115		0.0%						3.0E+00		6.5E+00					
CHLOROFORM	MG/KG	115		0.0%						2.2E+01		4.7E+01		0.3			
CHLOROMETHANE	MG/KG	115		0.0%													
CHROMIUM	MG/KG	93	91	97.8%	4	29.3	8.2			2.1E+02		4.5E+02		20	3		
CHRYSENE	MG/KG	250	35	14.0%	0.0223	31		5000		6.2E+01		2.1E+02		80			
CIS-1,2-DICHLOROETHENE	MG/KG	108		0.0%						4.3E+01		1.5E+02		0.2			
CIS-1,3-DICHLOROPROPENE	MG/KG	115		0.0%						7.8E+01		1.8E+00		0.002			
COBALT	MG/KG	89	28	31.5%	3	9.3				9.0E+02		1.9E+03					
COPPER	MG/KG	89	88	98.9%	6.2	24.3				3.1E+03		4.1E+04					
CYANIDE (TOTAL)	MG/KG	6		0.0%													
DIBENZO(A,H)ANTHRACENE	MG/KG	211	9	4.3%	0.0452	1.4		20		6.2E-02	8	2.1E-01	3	0.8	2		
DIBENZOFURAN	MG/KG	130	8	6.2%	0.36	39	ND			1.5E+02	3	1.6E+03					

**TABLE 4-3**  
**SUBSURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)	DEQ RBSL Ceiling Limit	Number of Samples Above DEQ RBSL Ceiling Limit
DIBROMOCHLOROMETHANE	MG/KG	115		0.0%					1.1E+00		2.6E+00		0.2				
DICHLOROBROMOMETHANE	MG/KG	115		0.0%													
DIELDRIN	MG/KG	6		0.0%					3.0E-02		1.1E-01		0.002				
DIESEL	MG/KG	50	12	24.0%	85	40900											
DIESEL RANGE ORGANICS	MG/KG	85	69	81.2%	47	58600											
DIESEL RANGE ORGANICS AS DIESEL	MG/KG	341	16	47.1%	18	29700	NA										
DIETHYL-PHTHALATE	MG/KG	140	1	0.7%	1.2	1.2			4.9E+04		1.0E+05						
DIMETHYL-PHTHALATE	MG/KG	138	1	0.7%	0.6	0.6			1.0E+05		1.0E+05						
DI-N-BUTYLPHTHALATE	MG/KG	138	4	2.9%	0.05	0.13			6.1E+03		6.2E+04		2700				
DI-N-OCTYLPHTHALATE	MG/KG	140	2	1.4%	0.24	0.41			2.4E+03		2.5E+04		100000				
ENDOSULFAN I	MG/KG	6		0.0%													
ENDOSULFAN II	MG/KG	6		0.0%													
ENDOSULFAN SULFATE	MG/KG	6		0.0%													
ENDRIN	MG/KG	9	1	11.1%	0.00095	0.00095			1.8E+01		1.8E+02		0.5				
ENDRIN ALDEHYDE	MG/KG	6		0.0%													
EPH SCREEN	MG/KG	41	3	75.0%	11	39											
ETHYLBENZENE	MG/KG	248	45	18.1%	0.00036	83	ND	40	1	4.0E+02	1	4.0E+02	1	7	2		
FLUORANTHENE	MG/KG	250	52	20.8%	0.061	200		4000		2.3E+03		2.2E+04		2100			
FLUORENE	MG/KG	252	58	23.0%	0.0179	1900	ND	600	1	2.7E+03	3	2.6E+04		280	3		
FREON 12	MG/KG	2		0.0%													
GAMMA-BHC	MG/KG	6		0.0%													
<b>GASOLINE RANGE ORGANICS</b>	MG/KG	11	9	81.8%	16	4900	NA										
GASOLINE RANGE ORGANICS AS GASOLINE	MG/KG	1	1	100.0%	244	244											
HEPTACHLOR	MG/KG	6		0.0%					1.1E-01		3.8E-01		10				
HEPTACHLOR EPOXIDE	MG/KG	6		0.0%					5.3E-02		1.9E-01		0.3				
HEXAChLOROBENZENE	MG/KG	138		0.0%					3.0E-01		1.1E+00		1				
HEXAChLOROBUTADIENE	MG/KG	138		0.0%					6.2E+00		2.2E+01		1				
HEXAChLORCYCLOPENTADIENE	MG/KG	138		0.0%					3.7E+02		3.7E+03		200				
HEXAChLOROETHANE	MG/KG	138		0.0%					3.5E+01		1.2E+02		0.2				
INDENO[1,2,3-CD]PYRENE	MG/KG	246	11	4.5%	0.0382	2.8		40	6.2E-01	3	2.1E+00	1	7				
IRON	MG/KG	89	89	100.0%	5000	53200	13000		2.3E+04	89	1.0E+05	73					
ISOPHORONE	MG/KG	138		0.0%					5.1E+02		5.1E+02		0.3				
ISOPROPYLBENZENE	MG/KG	105	5	4.8%	0.08	0.568			5.7E+02		2.0E+03						
LEAD	MG/KG	152	137	90.1%	5	4190	15.3		4.0E+02	12	8.0E+02	8					
LUBE OIL AND RELATED PRODUCTS	MG/KG	1	1	100.0%	200	200											
M+p-CRESOLS	MG/KG	105		0.0%													
M+p-XYLENES	MG/KG	150	32	21.3%	0.061	35	ND										
MAGNESIUM	MG/KG	91	9	100.0%	4488	13500											
MANGANESE	MG/KG	89	89	100.0%	82.9	668	342		1.8E+03	78	1.9E+04						
MERCURY	MG/KG	86		0.0%					2.3E+01		3.1E+02						
METHOXYPYCHLOR	MG/KG	6		0.0%					3.1E+02		3.1E+03		80				
METHYL TERT-BUTYL ETHER	MG/KG	187	5	2.7%	0.11	0.5		0.2	1	3.2E+01		7.0E+01					
METHYLENE CHLORIDE	MG/KG	118	51	4.2%	0.005	0.23			9.1E+00		2.1E+01		0.01	3			
M-XYLENE	MG/KG	6	1	16.7%	0.09	0.09											
NAPHTHALENE	MG/KG	308	87	28.2%	0.078	260	ND	30	6	5.6E+01	14	1.9E+02	10	40	4		
N-BUTYLBENZENE	MG/KG	105	15	14.3%	0.262	7.78			2.4E+02		2.4E+02						
NICKEL	MG/KG	89	86	96.6%	5	26.4	8.9										
NITROBENZENE	MG/KG	138		0.0%					2.0E+01		1.0E+02		0.07				
N-NITROSO-DIMETHYLAMINE	MG/KG	161		0.0%					9.5E+03		3.4E+02						
N-NITROSODIM-PROPLAMINE	MG/KG	138		0.0%					6.9E+02		2.5E+01		0.00002				
N-NITROSODIPHENYLAMINE	MG/KG	140	4	2.9%	71	1400			9.9E+01	2	3.5E+02	1	0.6	4			
N-PROPYLBENZENE	MG/KG	105	5	4.8%	0.12	1.08			2.4E+02		2.4E+02						
O-P-XYLEMES	MG/KG	6	1	16.7%	0.042	0.042											
O-XYLENE	MG/KG	157	28	17.8%	0.06	1.4											
PENTACHLOROPHENOL	MG/KG	230	128	55.7%	0.0014	2200	ND		3.0E+00	50	9.0E+00	40	0.01	97			
PHENANTHRENE	MG/KG	252	83	32.9%	0.0194	1200	0.038		1.8E+04		1.0E+05		50				
PHENOL	MG/KG	125		0.0%													
POTASSIUM	MG/KG	10	8	80.0%	284	1520											
PYRENE	MG/KG	250	83	33.2%	0.00478	660	0.0647	7000	2.3E+03	2	2.9E+04		2100				
PYRIDINE	MG/KG	6		0.0%					6.1E+01		6.2E+02						
SEC-BUTYLBENZENE	MG/KG	105	6	5.7%	0.11	0.485			2.2E+02		2.2E+02						
SELENIUM	MG/KG	88	9	10.2%	0.7	5.5	ND		3.9E+02		5.1E+03		3	2			
SILVER	MG/KG	89	7	7.9%	0.01	1.5			3.9E+02		5.1E+03		20				
SODIUM	MG/KG	10	9	90.0%	41	1010											
STYRENE	MG/KG	115		0.0%					1.7E+03		1.7E+03		2				
TETRAChLOROETHENE	MG/KG	115		0.0%					4.8E+01		1.3E+00		0.03				
TETRAChLOROPHENOL	MG/KG	113	1	0.9%	0.023	0.023											
TETRAETHYLELEAD	MG/KG	95		0.0%					6.1E-03		6.2E-02						
THALLIUM	MG/KG	86	6	7.0%	0.05	0.1			5.2E+00		6.7E+01						
TIN	MG/KG	84	7	8.3%	0.6	7.4			4.7E+04		1.0E+05						
TOLUENE	MG/KG	251	19	7.6%	0.00054	270	ND	40	2	5.2E+02	1	5.2E+02	1	6	2		
TOTAL EPH	MG/KG	59	59	100.0%	7	58179	136									5000	28
TOTAL EXTRACTABLE HYDROCARBONS	MG/KG	196	161	82.1%	7.5	566000	136									5000	51
TOTAL EXTRACTABLE HYDROCARBONS - SCREEN	MG/KG	113	82	72.6%	5.4	14800	136									5000	11
TOTAL PETROLEUM HYDROCARBONS	MG/KG	41	40	97.6%	18	43000	136									5000	5
TOTAL PURGEABLE HYDROCARBONS	MG/KG	140	73	52.1%	1.9	6110	ND										
TOXAPHENE	MG/KG	6		0.0%					4.4E+01		1.6E+00		20				

**TABLE 4-3**  
**SUBSURFACE SOIL ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ RBSL	Number of Samples Above DEQ RBSL	EPA Region 9 Residential PRG	Number of Samples Above EPA Region 9 Residential PRG	EPA Region 9 Industrial PRG	Number of Samples Above EPA Region 9 Industrial PRG	EPA Region 9 SSL (DAF=10)	Number of Samples Above EPA Region 9 SSL (DAF=10)	DEQ RBSL Ceiling Limit	Number of Samples Above DEQ RBSL Ceiling Limit
TRANS-1,2-DICHLOROETHENE	MG/KG	115		0.0%					6.9E+01		2.3E+02		0.3				
TRANS-1,2-DICHLOROPROPENE	MG/KG	2		0.0%													
TRANS-1,3-DICHLOROPROPENE	MG/KG	113		0.0%					7.8E-01		1.8E+00		0.002				
TRICHLOROETHENE	MG/KG	115		0.0%					5.3E-02		1.1E-01		0.03				
TRICHLOROFLUOROMETHANE	MG/KG	2		0.0%					3.9E+02		2.0E+03						
TYPH	MG/KG	311	17	54.8%	12.4	1790											
VANADIUM	MG/KG	89	89	100.0%	3.5	17.7	10.9		7.8E+01	19	1.0E+03		3000				
VINYL ACETATE	MG/KG	112		0.0%					4.3E+02		1.4E+03		80				
VINYL CHLORIDE	MG/KG	115		0.0%					7.9E-02		7.5E-01		0.007				
XYLENE	MG/KG	4	3	75.0%	0.017	0.25	ND										
XYLEMES (TOTAL)	MG/KG	241	70	29.0%	0.00074	600	ND	200	1	2.7E+02	5	4.2E+02	4	100	1	6200	
ZINC	MG/KG	93	92	98.9%	14.6	71.6			2.3E+04		1.0E+05						

Notes

DEQ Risk-Based Screening Level (RBSL) (DEQ 2002)

EPA Region 9 soil preliminary remediation goals (PRG) (EPA 2004)

EPA Region 9 soil screening level (SSL) dilution attenuation factor (DAF) (EPA 2004)

Blank cell indicates no concentration reported, no criteria were exceeded, or no screening criteria are available

NA = Not available

ND = Not detected

Analyses in**BOLD** are contaminants of potential concern (COPC). COPC must (1) be detected in at least 5 percent of samples, (2) exceed screening criteria or have no criteria, (3) exceed background concentration, and (4) not be essential nutri-

Background concentrations included only for COPCs

**TABLE 4-4**  
**SURFACE WATER ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ Acute Criteria	Number of Samples Above DEQ Acute Criteria	DEQ Chronic Criteria	Number of Samples Above DEQ Chronic Criteria
1,2,3,4,6,7,8,9-OCDD	pg/L	3		0.0%									
1,2,3,4,6,7,8,9-OCDF	pg/L	3	2	66.7%	29	100							
1,2,3,4,6,7,8-HPCDD	pg/L	3	3	100.0%	7.4	140							
1,2,3,4,6,7,8-HPCDF	pg/L	3		0.0%									
1,2,3,4,7,8,9-HPCDF	pg/L	3		0.0%									
1,2,3,4,7,8-HXCDD	pg/L	3		0.0%									
1,2,3,4,7,8-HXCDF	pg/L	3		0.0%									
1,2,3,6,7,8-HXCDD	pg/L	3		0.0%									
1,2,3,6,7,8-HXCDF	pg/L	3		0.0%									
1,2,3,7,8,9-HXCDD	pg/L	3		0.0%									
1,2,3,7,8,9-HXCDF	pg/L	3		0.0%									
1,2,3,7,8-PECDD	pg/L	3		0.0%									
1,2,3,7,8-PECDF	pg/L	3		0.0%									
2,3,4,6,7,8-HXCDF	pg/L	3		0.0%									
2,3,4,7,8-PECDF	pg/L	3		0.0%									
2,3,7,8-TCDD	pg/L	3		0.0%									
2,3,7,8-TCDF	pg/L	3		0.0%									
<b>2,3,7,8-TCDD (TEQ) (WHO1998)</b>	pg/L	3	3	100.0%	0.074455	2.17	0.29	0.05	3				
ALUMINUM	UG/L	5	5	100.0%	180	250	250			750		87	5
ANTIMONY	UG/L	5		0.0%				5.6					
ARSENIC	UG/L	5		0.0%				10		340		150	
BARIUM	UG/L	5	5	100.0%	80	85		2000					
BERYLLIUM	UG/L	5		0.0%				4					
CADMIUM	UG/L	5		0.0%				5		0.52		0.097	
CHROMIUM	UG/L	5		0.0%				100					
COBALT	UG/L	5		0.0%									
COPPER	UG/L	5		0.0%				1300		3.79		2.85	
IRON	UG/L	5	5	100.0%	210	270		300				1000	
LEAD	UG/L	5		0.0%				15		13.98		0.545	
MANGANESE	UG/L	5	5	100.0%	24	32		50					
MERCURY	UG/L	5		0.0%				0.05		1.7		0.91	
NICKEL	UG/L	5		0.0%				100		145		16.1	
SELENIUM	UG/L	5		0.0%				50		20		5	
SILVER	UG/L	5		0.0%				100		0.374			
THALLIUM	UG/L	5		0.0%				0.24					
TIN	UG/L	5		0.0%									
VANADIUM	UG/L	5		0.0%									
ZINC	UG/L	1		0.0%				2000		37		37	
PENTACHLOROPHENOL	ug/L	5		0.0%				1		5.3		4	
C5-C8 ALIPHATICS	ug/L	5		0.0%									
C9-C10 AROMATICS	ug/L	5		0.0%									
C9-C12 ALIPHATICS	ug/L	5		0.0%									
TOTAL EXTRACTABLE HYDROCARBONS - SCREEN	UG/L	5		0.0%									
TOTAL PURGEABLE HYDROCARBONS	ug/L	5		0.0%									
1,2,4-TRICHLOROBENZENE	ug/L	5		0.0%				35					
1,4-DICHLOROBENZENE	ug/L	5		0.0%				75					
1-METHYLNAPHTHALENE	ug/L	5		0.0%									
2,3,4,5-TETRACHLOROPHENOL	ug/L	5		0.0%									
2,3,4,6-TETRACHLOROPHENOL	ug/L	5		0.0%									
2,3,4-TRICHLOROPHENOL	ug/L	5		0.0%									
2,3,5,6-TETRACHLOROPHENOL	ug/L	5		0.0%									
2,4,5-TRICHLOROPHENOL	ug/L	5		0.0%				7					
2,4,6-TRICHLOROPHENOL	ug/L	5		0.0%				14					
2,4-DICHLOROPHENOL	ug/L	5		0.0%				77					

**TABLE 4-4**  
**SURFACE WATER ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ Acute Criteria	Number of Samples Above DEQ Acute Criteria	DEQ Chronic Criteria	Number of Samples Above DEQ Chronic Criteria
2,4-DIMETHYLPHENOL	ug/L	5		0.0%				380					
2,4-DINITROPHENOL	ug/L	5		0.0%				69					
2,4-DINITROTOLUENE	ug/L	5		0.0%				0.5					
2,6-DIMETHYLNAPHTHALENE	ug/L	5		0.0%									
2,6-DINITROTOLUENE	ug/L	5		0.0%				0.5					
2-CHLORONAPHTHALENE	ug/L	5		0.0%				1000					
2-CHLOROPHENOL	ug/L	5		0.0%				81					
2-METHYLNAPHTHALENE	ug/L	5		0.0%									
2-METHYLPHENOL	ug/L	5		0.0%				13					
2-NITROANILINE	ug/L	5		0.0%									
2-NITROPHENOL	ug/L	5		0.0%									
3,3'-DICHLOROBENZIDINE	ug/L	5		0.0%				0.21					
3-NITROANILINE	ug/L	5		0.0%									
4,6-DINITRO-2-METHYLPHENOL	ug/L	5		0.0%				13					
4-BROMOPHENYLPHENYLETHER	ug/L	5		0.0%									
4-CHLORO-3-METHYLPHENOL	ug/L	5		0.0%				3000					
4-CHLOROANILINE	ug/L	5		0.0%									
4-CHLOROPHENYLPHENYLETHER	ug/L	5		0.0%									
4-NITROANILINE	ug/L	5		0.0%									
4-NITROPHENOL	ug/L	5		0.0%				60					
ACENAPHTHENE	ug/L	5		0.0%				670					
ANTHRACENE	ug/L	5		0.0%				8300					
BENZO(A)ANTHRACENE	ug/L	5		0.0%				0.038					
BENZO(A)PYRENE	ug/L	5		0.0%				0.038					
BENZO(B)FLUORANTHENE	ug/L	5		0.0%				0.038					
BENZO(E)PYRENE	ug/L	5		0.0%									
BENZO(G,H,D)PERYLENE	ug/L	5		0.0%									
BENZO(K)FLUORANTHENE	ug/L	5		0.0%				0.038					
BENZOIC ACID	ug/L	5		0.0%									
BENZYL ALCOHOL	ug/L	5		0.0%									
BIPHENYL	ug/L	5		0.0%									
BIS(2-CHLOROETHOXY)METHANE	ug/L	5		0.0%									
BIS(2-CHLOROETHYL)ETHER	ug/L	5		0.0%				0.3					
BIS(2-CHLOROISOPROPYL)ETHER	ug/L	5		0.0%									
BIS(2-ETHYLHEXYL)ADIPATE	ug/L	5		0.0%				300					
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L	5		0.0%				6					
BUTYL BENZYL PHTHALATE	ug/L	5		0.0%				1500					
CARBAZOLE	ug/L	5		0.0%									
CHRYSENE	ug/L	5		0.0%				0.038					
DIBENZO(A,H)ANTHRACENE	ug/L	5		0.0%				0.038					
DIBENZOFURAN	ug/L	5		0.0%									
DIETHYL PHTHALATE	ug/L	5		0.0%				17000					
DIMETHYL PHTHALATE	ug/L	5		0.0%				270000					
DI-N-BUTYLPHthalate	ug/L	5		0.0%				2000					
DI-N-OCTYLPHthalate	ug/L	5		0.0%									
FLUORANTHENE	ug/L	5		0.0%				130					
FLUORENE	ug/L	5		0.0%				1100					
HEXACHLOROBENZENE	ug/L	5		0.0%				0.0028					
HEXACHLOROBUTADIENE	ug/L	5		0.0%				4.4					
HEXACHLOROCYCLOPENTADIENE	ug/L	5		0.0%				40					
HEXACHLOROETHANE	ug/L	5		0.0%				14					
INDENO(1,2,3-CD)PYRENE	ug/L	5		0.0%				0.038					
ISOPHORONE	ug/L	5		0.0%				350					
M+P-CRESOLS	ug/L	5		0.0%									

**TABLE 4-4**  
**SURFACE WATER ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ Acute Criteria	Number of Samples Above DEQ Acute Criteria	DEQ Chronic Criteria	Number of Samples Above DEQ Chronic Criteria
NITROBENZENE	ug/L	5		0.0%				17					
N-NITROSODI-N-PROPYLAMINE	ug/L	5		0.0%				0.05					
N-NITROSODIPHENYLAMINE	ug/L	5		0.0%				33					
PHENANTHRENE	ug/L	5		0.0%									
PHENOL	ug/L	5		0.0%				300					
PYRENE	ug/L	5		0.0%				830					
TETRAETHYLLEAD	ug/L	5		0.0%									
1,1,1-TRICHLOROETHANE	ug/L	5		0.0%				200					
1,1,2,2-TETRACHLOROETHANE	ug/L	5		0.0%				1.7					
1,1,2-TRICHLOROETHANE	ug/L	5		0.0%				3					
1,1-DICHLOROETHANE	ug/L	5		0.0%									
1,1-DICHLOROETHENE	ug/L	5		0.0%				0.57					
1,2,4-TRIMETHYLBENZENE	ug/L	5		0.0%									
1,2-DICHLOROETHANE	ug/L	5		0.0%				3.8					
1,2-DICHLOROPROPANE	ug/L	5		0.0%				5					
1,3,5-TRIMETHYLBENZENE	ug/L	5		0.0%									
2-BUTANONE	ug/L	5		0.0%									
2-HEXANONE	ug/L	5		0.0%									
4-ISOPROPYLtolUENE	ug/L	5		0.0%									
4-METHYL-2-PENTANONE	ug/L	5		0.0%									
ACETONE	ug/L	5		0.0%									
ACROLEIN	ug/L	5		0.0%				190					
BENZENE	ug/L	5		0.0%				5					
BROMOFORM	ug/L	5		0.0%				43					
BROMOMETHANE	ug/L	5		0.0%				47					
CARBON DISULFIDE	ug/L	5		0.0%									
CARBON TETRACHLORIDE	ug/L	5		0.0%				2.3					
CHLOROBENZENE	ug/L	5		0.0%				100					
CHLOROETHANE	ug/L	5		0.0%									
CHLOROFORM	ug/L	5		0.0%				57					
CHLOROMETHANE	ug/L	5		0.0%									
CIS-1,2-DICHLOROETHENE	ug/L	5		0.0%				70					
CIS-1,3-DICHLOROPROPENE	ug/L	5		0.0%				3.4					
DIBROMOCHLOROMETHANE	ug/L	5		0.0%				4					
DICHLOROBROMOMETHANE	ug/L	5		0.0%									
ETHYLBENZENE	ug/L	5		0.0%				530					
ISOPROPYLBENZENE	ug/L	5		0.0%									
M+p-Xylenes	ug/L	5		0.0%									
METHYL ISOPROPYL ETHER	ug/L	5		0.0%									
METHYL TERT-BUTYL ETHER	ug/L	5		0.0%				30					
METHYLENE CHLORIDE	ug/L	5		0.0%				5					
NAPHTHALENE	ug/L	5		0.0%				100					
N-BUTYLBENZENE	ug/L	5		0.0%									
N-PROPYLBENZENE	ug/L	5		0.0%									
O-XYLENE	ug/L	5		0.0%				10000					
SEC-BUTYLBENZENE	ug/L	5		0.0%									
STYRENE	ug/L	5		0.0%				100					
TETRACHLOROETHENE	ug/L	5		0.0%				5					
TOLUENE	ug/L	5		0.0%				1000					
TRANS-1,2-DICHLOROETHENE	ug/L	5		0.0%				100					
TRANS-1,3-DICHLOROPROPENE	ug/L	5		0.0%				2					
TRICHLOROETHENE	ug/L	5		0.0%				5					
VINYL ACETATE	ug/L	5		0.0%									
VINYL CHLORIDE	ug/L	5		0.0%				0.25					

**TABLE 4-4**  
**SURFACE WATER ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Maximum Background Concentration	DEQ Human Health Standard	Number of Samples Above DEQ Human Health Standard	DEQ Acute Criteria	Number of Samples Above DEQ Acute Criteria	DEQ Chronic Criteria	Number of Samples Above DEQ Chronic Criteria
XYLEMES (TOTAL)	ug/L	5		0.0%				10000					

Notes

DEQ Human Health Standard from DEQ Circular 7 (DEQ 2006)

DEQ Acute Standard (DEQ 2006)

DEQ Chronic Standard (DEQ 2006)

Blank cell indicates no concentration reported, no criteria were exceeded, or no screening criteria are available

**TABLE 4-5**  
**SEDIMENT ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Sediment Criteria	Number of Samples Above Sediment Criteria
1,1,1-TRICHLOROETHANE	MG/KG	5		0.0%				
1,1,2,2-TETRACHLOROETHANE	MG/KG	5		0.0%				
1,1,2-TRICHLOROETHANE	MG/KG	5		0.0%				
1,1-DICHLOROETHANE	MG/KG	5		0.0%				
1,1-DICHLOROETHENE	MG/KG	5		0.0%				
1,2,3,4,6,7,8,9-OCDD	ng/Kg	5	3	60.0%	12.6	490		
1,2,3,4,6,7,8,9-OCDF	ng/Kg	5	2	40.0%	11.4	30		
1,2,3,4,6,7,8-HPCDD	ng/Kg	5	3	60.0%	1.52	37		
1,2,3,4,6,7,8-HPCDF	ng/Kg	5	3	60.0%	2.3	5.49		
1,2,3,4,7,8,9-HPCDF	ng/Kg	5	1	20.0%	0.27	0.27		
1,2,3,4,7,8-HXCDD	ng/Kg	5		0.0%				
1,2,3,4,7,8-HXCDF	ng/Kg	5		0.0%				
1,2,3,6,7,8-HXCDD	ng/Kg	5		0.0%				
1,2,3,6,7,8-HXCDF	ng/Kg	5	1	20.0%	0.064	0.064		
1,2,3,7,8,9-HXCDD	ng/Kg	5		0.0%				
1,2,3,7,8,9-HXCDF	ng/Kg	5		0.0%				
1,2,3,7,8-PECDD	ng/Kg	5		0.0%				
1,2,3,7,8-PECDF	ng/Kg	5		0.0%				
1,2,4-TRICHLOROBENZENE	MG/KG	7		0.0%				
1,2,4-TRIMETHYLBENZENE	MG/KG	5		0.0%				
1,2-DICHLOROBENZENE	MG/KG	2		0.0%				
1,2-DICHLOROETHANE	MG/KG	5		0.0%				
1,2-DICHLOROPROPANE	MG/KG	5		0.0%				
1,3,5-TRIMETHYLBENZENE	MG/KG	5		0.0%				
1,3-DICHLOROBENZENE	MG/KG	2		0.0%				
1,4-DICHLOROBENZENE	MG/KG	7		0.0%				
1-METHYLNAPHTHALENE	MG/KG	5		0.0%				
2,3,4,5-TETRACHLOROPHENOL	MG/KG	5		0.0%				
2,3,4,6,7,8-HXCDF	ng/Kg	5		0.0%				
2,3,4,6-TETRACHLOROPHENOL	MG/KG	5		0.0%				
2,3,4,7,8-PECDF	ng/Kg	5		0.0%				
2,3,4-TRICHLOROPHENOL	MG/KG	5		0.0%				
2,3,5,6-TETRACHLOROPHENOL	MG/KG	5		0.0%				
2,3,7,8-TCDD	ng/Kg	5		0.0%				
2,3,7,8-TCDD (TEQ) (WHO2005)	ng/Kg	3	3	100.0%	0.011	0.5931		
2,3,7,8-TCDF	ng/Kg	5		0.0%				
2,4,5-TRICHLOROPHENOL	MG/KG	7		0.0%				
2,4,6-TRICHLOROPHENOL	MG/KG	7		0.0%				

**TABLE 4-5**  
**SEDIMENT ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Sediment Criteria	Number of Samples Above Sediment Criteria
2,4-DICHLOROPHENOL	MG/KG	7		0.0%				
2,4-DIMETHYLPHENOL	MG/KG	7		0.0%				
2,4-DINITROPHENOL	MG/KG	7		0.0%				
2,4-DINITROTOLUENE	MG/KG	7		0.0%				
2,6-DIMETHYLNAPHTHALENE	MG/KG	5		0.0%				
2,6-DINITROTOLUENE	MG/KG	7		0.0%				
2-BUTANONE	MG/KG	5		0.0%				
2-CHLORONAPHTHALENE	MG/KG	7		0.0%				
2-CHLOROPHENOL	MG/KG	7		0.0%				
2-HEXANONE	MG/KG	5		0.0%				
2-METHYLNAPHTHALENE	MG/KG	7		0.0%				
2-METHYLPHENOL	MG/KG	7		0.0%				
2-NITROANILINE	MG/KG	7		0.0%				
2-NITROPHENOL	MG/KG	7		0.0%				
3,3'-DICHLOROBENZIDINE	MG/KG	7		0.0%				
3-NITROANILINE	MG/KG	7		0.0%				
4,6-DINITRO-2-METHYLPHENOL	MG/KG	7		0.0%				
4-BROMOPHENYLPHENYLETHER	MG/KG	7		0.0%				
4-CHLORO-3-METHYLPHENOL	MG/KG	7		0.0%				
4-CHLOROANILINE	MG/KG	7		0.0%				
4-CHLOROPHENYLPHENYLETHER	MG/KG	7		0.0%				
4-ISOPROPYLtolUENE	MG/KG	5		0.0%				
4-METHYL-2-PENTANONE	MG/KG	5		0.0%				
4-METHYLPHENOL/3-METHYLPHENOL	MG/KG	2		0.0%				
4-NITROANILINE	MG/KG	7		0.0%				
4-NITROPHENOL	MG/KG	7		0.0%				
ACENAPHTHENE	MG/KG	7	1	14.3%	0.0122	0.0122	3.5	
ACENAPHTHYLENE	MG/KG	2	1	50.0%	0.0099	0.0099		
ACETONE	MG/KG	5		0.0%				
ACROLEIN	MG/KG	5		0.0%				
ALUMINUM	MG/KG	5	5	100.0%	9180	11300		
ANTHRACENE	MG/KG	7	2	28.6%	0.0092	0.0514	2.1	
ANTIMONY	MG/KG	5		0.0%				3
ARSENIC	MG/KG	5	5	100.0%	1.67	2.66	57	
BARIUM	MG/KG	5	5	100.0%	93	123		
BENZENE	mg/kg	7		0.0%				
BENZO(A)ANTHRACENE	MG/KG	7	2	28.6%	0.0182	0.114	5	
BENZO(A)PYRENE	MG/KG	7	2	28.6%	0.0167	0.0735	7	

**TABLE 4-5**  
**SEDIMENT ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Sediment Criteria	Number of Samples Above Sediment Criteria
BENZO(B)FLUORANTHENE	MG/KG	7	4	57.1%	0.0342	0.157	11	
BENZO(E)PYRENE	MG/KG	5		0.0%				
BENZO(G,H,I)PERYLENE	MG/KG	7	2	28.6%	0.0067	0.0226		
BENZO(K)FLUORANTHENE	MG/KG	7	1	14.3%	0.0334	0.0334	11	
BENZOIC ACID	MG/KG	7		0.0%				
BENZYL ALCOHOL	MG/KG	7		0.0%				
BERYLLIUM	MG/KG	5		0.0%				
BIPHENYL	MG/KG	5		0.0%				
BIS(2-CHLOROETHOXY)METHANE	MG/KG	7		0.0%				
BIS(2-CHLOROETHYL)ETHER	MG/KG	7		0.0%				
BIS(2-CHLOROISOPROPYL)ETHER	MG/KG	7		0.0%				
BIS(2-ETHYLHEXYL)ADIPATE	MG/KG	5		0.0%				
BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	7	2	28.6%	0.063	0.1	0.64	
BROMOFORM	MG/KG	5		0.0%				
BROMOMETHANE	MG/KG	5		0.0%				
BUTYL BENZYL PHTHALATE	MG/KG	7		0.0%				
C11-C22 AROMATICS	mg/kg	4	1	25.0%	15	15		
C19-C36 ALIPHATICS	mg/kg	4	2	50.0%	10	14		
C5-C8 ALIPHATICS	mg/kg	7		0.0%				
C5-C8 ALIPHATICS ADJUSTED	mg/kg	2		0.0%				
C9-C10 AROMATICS	mg/kg	7		0.0%				
C9-C12 ALIPHATICS	mg/kg	7		0.0%				
C9-C12 ALIPHATICS ADJUSTED	mg/kg	2		0.0%				
C9-C18 ALIPHATICS	mg/kg	4		0.0%				
CADMIUM	MG/KG	5		0.0%			5.1	
CARBAZOLE	MG/KG	5		0.0%			0.14	
CARBON DISULFIDE	MG/KG	5		0.0%				
CARBON TETRACHLORIDE	MG/KG	5		0.0%				
CHLOROBENZENE	MG/KG	5		0.0%				
CHLOROETHANE	MG/KG	5		0.0%				
CHLOROFORM	MG/KG	5		0.0%				
CHLOROMETHANE	MG/KG	5		0.0%				
CHROMIUM	MG/KG	5	5	100.0%	7.8	9.3	260	
CHRYSENE	MG/KG	7	2	28.6%	0.0216	0.0949	7.4	
CIS-1,2-DICHLOROETHENE	MG/KG	5		0.0%				
CIS-1,3-DICHLOROPROPENE	MG/KG	5		0.0%				
COBALT	MG/KG	5	2	40.0%	5.1	5.5		
COPPER	MG/KG	5	5	100.0%	10.2	13.6	390	

**TABLE 4-5**  
**SEDIMENT ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Sediment Criteria	Number of Samples Above Sediment Criteria
DIBENZO(A,H)ANTHRACENE	MG/KG	7	1	14.3%	0.0094	0.0094	0.23	
DIBENZOFURAN	MG/KG	7		0.0%			32	
DIBROMOCHLOROMETHANE	MG/KG	5		0.0%				
DICHLOROBROMOMETHANE	MG/KG	5		0.0%				
DIETHYL PHTHALATE	MG/KG	7		0.0%				
DIMETHYL PHTHALATE	MG/KG	7		0.0%				
DI-N-BUTYLPHTHALATE	MG/KG	7		0.0%			0.043	
DI-N-OCTYLPHTHALATE	MG/KG	7		0.0%				
ETHYLBENZENE	mg/kg	7		0.0%				
FLUORANTHENE	MG/KG	7	2	28.6%	0.0439	0.26	11	
FLUORENE	MG/KG	7	1	14.3%	0.0156	0.0156	3.6	
HEXACHLOROBENZENE	MG/KG	7		0.0%				
HEXACHLOROBUTADIENE	MG/KG	7		0.0%				
HEXACHLOROCYCLOPENTADIENE	MG/KG	7		0.0%				
HEXACHLOROETHANE	MG/KG	7		0.0%				
INDENO(1,2,3-CD)PYRENE	MG/KG	7	1	14.3%	0.0208	0.0208	0.73	
IRON	MG/KG	5	5	100.0%	12700	14700		
ISOPHORONE	MG/KG	7		0.0%				
ISOPROPYLBENZENE	MG/KG	5		0.0%				
LEAD	mg/kg	7	7	100.0%	8.5	12.7	450	
M+P-CRESOLS	MG/KG	5	2	40.0%	0.052	0.25		
M+P-XYLENES	MG/KG	5		0.0%				
MANGANESE	MG/KG	5	5	100.0%	213	320	1800	
MERCURY	MG/KG	5		0.0%			0.41	
METHYL ISOPROPYL ETHER	MG/KG	5		0.0%				
METHYL TERT-BUTYL ETHER	mg/kg	7		0.0%				
METHYLENE CHLORIDE	MG/KG	5		0.0%				
NAPHTHALENE	MG/KG	7		0.0%			37	
N-BUTYLBENZENE	MG/KG	5		0.0%				
NICKEL	MG/KG	5	5	100.0%	8.2	10	46	
NITROBENZENE	MG/KG	7		0.0%				
N-NITROSODI-N-PROPYLAMINE	MG/KG	7		0.0%				
N-NITROSODIPHENYLAMINE	MG/KG	7		0.0%				
N-PROPYLBENZENE	MG/KG	5		0.0%				
O-XYLENE	MG/KG	5		0.0%				
PENTACHLOROPHENOL	MG/KG	6		0.0%				
PHENANTHRENE	MG/KG	7	2	28.6%	0.0388	0.227		
PHENOL	MG/KG	7		0.0%			0.048	

**TABLE 4-5**  
**SEDIMENT ANALYTE STATISTICS**

ANALYTE	UNITS	Number of Samples	Number of Detects	Percent Detected	Minimum Detected Concentration	Maximum Detected Concentration	Sediment Criteria	Number of Samples Above Sediment Criteria
PYRENE	MG/KG	7	3	42.9%				
QUINOLINE	MG/KG	2		0.0%				
SEC-BUTYLBENZENE	MG/KG	5		0.0%				
SELENIUM	MG/KG	5		0.0%				
SILVER	MG/KG	5		0.0%				
STYRENE	MG/KG	5		0.0%				
TETRACHLOROETHENE	MG/KG	5		0.0%				
TETRAETHYLLEAD	MG/KG	5		0.0%				
THALLIUM	MG/KG	5		0.0%				
TIN	MG/KG	5		0.0%				
TOLUENE	mg/kg	7	2	28.6%	0.098	0.24		
TOTAL EXTRACTABLE HYDROCARBONS	mg/kg	4	2	50.0%	44	71		
TOTAL EXTRACTABLE HYDROCARBONS - SCREEN	MG/KG	5	5	100.0%	20	107		
TOTAL PURGEABLE HYDROCARBONS	MG/KG	5		0.0%				
TRANS-1,2-DICHLOROETHENE	MG/KG	5		0.0%				
TRANS-1,3-DICHLOROPROPENE	MG/KG	5		0.0%				
TRICHLOROETHENE	MG/KG	5		0.0%				
TVPH	mg/kg	2		0.0%				
VANADIUM	MG/KG	5	5	100.0%	8.1	10		
VINYL ACETATE	MG/KG	5		0.0%				
VINYL CHLORIDE	MG/KG	5		0.0%				
XYLENES (TOTAL)	mg/kg	7		0.0%				
ZINC	MG/KG	5	5	100.0%	37.6	49.9	410	

Notes:

Washington State Freshwater Sediment Criteria (Washington State 1997)

Blank cell indicates no concentration reported, no criteria were exceeded, or no screening criteria are available

No contaminants of potential concern (COPC) identified

No background concentrations included because no COPCs identified

**TABLE 4-6**  
**GENERAL PHYSICAL AND CHEMICAL PROPERTIES OF SELECTED COPCs**  
**KALISPELL POLE AND TIMBER, RELIANCE REFINERY, AND YALE OIL FACILITIES**

COPC	CAS #	Water Solubility (mg/L)	Log K <sub>ow</sub>	Log K <sub>oc</sub>	Vapor Pressure (as mm of Hg)	Henry's Law Constant (atm·m <sup>3</sup> /mol)
PCP	87-86-5	14 at 20°C	5.01	4.5	0.00011 at 25°C	3.4x10 <sup>-6</sup> at 25°C
2,3,7,8-TCDD	1746-01-6	1.9x10 <sup>-5</sup> at 20°C	6.8-7.58	No data	1.5x10 <sup>-9</sup> – 5.3x10 <sup>-5</sup> at 20°C	16.1x10 <sup>-6</sup> – 101.7x10 <sup>-6</sup> at 25°C
Benzene	71-43-2	1,880 at 25°C	2.13	1.8-1.9	75 at 20°C	5.5x10 <sup>-3</sup> at 20°C
1,2,4-Trimethylbenzene	95-63-6	57 at 20°C	3.78	2.67	2.03 at 25°C	5.18x10 <sup>-3</sup>
Benzo(a)pyrene	50-32-8	0.0038 at 25°C	6.04	6.6-6.8	>1 at 20°C	NA
Fuel Oil No. 2 - Diesel	68476-34-6	5 at 20°C	3.3-7.06	3.0-6.7	2.12-26.4 at 21°C	5.9x10 <sup>-5</sup> - 7.4 at 20°C

Notes:

Source: USEPA Envirofacts Master Chemical Integrator (EMCI), [http://www.epa.gov/enviro/html/emci/chemref/short\\_index.html](http://www.epa.gov/enviro/html/emci/chemref/short_index.html)

°C	Degree Celsius
>	Greater than
atm·m <sup>3</sup> /mol	Atmospheric cubic meters per mole
COPC	Contaminant of Potential Concern
Hg	Mercury
K <sub>oc</sub>	Organic-carbon partition coefficient
K <sub>ow</sub>	Octanol-water partition coefficient
mg/L	Milligrams per liter
mm	Millimeters
NA	Not available

**TABLE 4-7**  
**SUMMARY OF SOIL PHYSICAL PARAMETERS**  
**KALISPELL POLE AND TREATING, RELIANCE REFINERY, AND YALE OIL**  
**FACILITIES**

Sample Number	Sample Date	Well	Sample Depth (ft bgs)	Moisture Content (%)	Specific Gravity <sup>A</sup>	Porosity (%)	pH	Unified Soil Classification <sup>B</sup>	TOC (%)
KRY113ASB001	5/23/2006	KRY113A	5 – 18	1.4	2.721	19*	7.96	GP-GM	---
KRY115ASB001	5/4/2006	KRY115A	10 – 15	11.4	2.701	24	9.12	CL <sup>1</sup>	---
KRY115ASB002	5/4/2006	KRY115A	23 – 27	3.6	NA	NA	8.10	SP-SM	---
KRY121ASB001	5/4/2006	KRY121A	10 – 15	17.7	2.494	23	7.97	CL <sup>2</sup>	---
KRY121ASB002	5/4/2006	KRY121A	24 – 28.5	7.5	2.683	18	7.48	SW-SM	---
KRY139BSB001	6/10/2006	KRY139B	30 - 42	21.4	2.662	36	7.71	CL <sup>3</sup>	---
KRY121BSB001	4/20/2006	KRY121B	12.5 – 15	---	---	---	---	---	2.24
KRY121BSB002	4/20/2006	KRY121B	25 – 27	---	---	---	---	---	1.77

**Notes:**

\* 8% saturated moisture content used for porosity calculation

<sup>A</sup> Analyzed by American Association of State Highway and Transportation Officials (AASHTO) test method T100

<sup>B</sup> Analyzed by ASTM Method D2487

bgs	Below ground surface
CL <sup>1</sup>	Sandy lean clay with gravel
CL <sup>2</sup>	Sandy lean clay
CL <sup>3</sup>	Lean clay
GP-GM	Poorly graded gravel with silt
SP-SM	Poorly graded sand with silt
SW-SM	Well graded sand with silt and gravel
TOC	Total organic carbon
NA	Not applicable
---	No Data